COAL AGE

The Weekly Journal of the Coal and Coke Industries

Volume 17 NEW YORK, THURSDAY, JUNE 10, 1920 Number 24

Engineers Advance in Organization

AN epoch-making step in engineering organization was taken in the Washington conference of technical society representatives which decided upon the formation of a federation of these technical associations. This is the first all-embracing movement of the engineers to place their activities upon a full professional basis comparable with that of the other learned professions of law, medicine and the clergy; and as such is of the greatest importance.

For a number of years the several larger national engineering societies have been affiliated through the Engineering Council and other channels, but the work thus done is limited in many ways. It is a happy development, therefore, that gives us the larger agency which is now assured.

The element of public service and of greater participation in the constructive thought of the nation were stressed many times in the organization meetings and the application of these ideas will go far to inspire and support the effort that is now beginning. Indeed it was the clear recognition that these ideals must govern more fully the major professional activities that was most convincing as an argument for the comprehensive organization.

At the outset of the conference it was apparent that there would be considerable difference of opinion as to whether there should be an organization made up of representatives of the various societies now functioning or only an organization of individuals, such as the American Association of Engineers.

The latter scheme was at first advocated by a few of the delegates, but a full discussion soon developed a unanimous vote in favor of the former plan. Apparently the determining factor in this decision was the realization that two major activities confront the engineers as a group: First, advancement of the professional work to a proper plane both in action and in adequate recognition of the importance of the profession by the public; and second a service for the individual engineer in the matter of salaries, working arrangements, and other relations particularly with the employer. The latter group of needs is being covered most actively by the American Association of Engineers, and it seems to be the thought that this is the proper agency to continue in this work. The professional problems, on the other hand, have not had the broad attention that all technical men would wish, and it is for these responsibilities that the new body will no doubt most effectively function.

Thus far coal mining engineers have not been participants as a group in the plan of co-operative effort. But this does not by any means signify that they are either not needed or not welcome. They should through every available agency in which they are active give their support to the larger ideals that seem now within the possibilities of realization. It is a duty as well as a privilege to take this part in the advance of the profession.

Their civic consciousness and the sense that all parts of engineering are interdependent serve to bring the engineers into a common body. Specialization has done a good work, but engineers need to supplement it by association. Their interests, in many ways variant, are and should be in large degree united.

Let New England Face the Facts

OUR coal is now in the markets of the world. The present situation in which consumers in New England are forced to bid against the world at large for their coal, or that part of it that reaches them by water, is not of the making of the coal man. There is a tremendous shortage of coal in the world—a shortage created in some countries by depleted man power, in others by lack of transportation, in some by both causes. The situation was plainly forecast by many competent observers a year ago. Today coal is being carried from British colonies as far away as South Africa and India, to supply the demand in the Mediterranean market. The English coal trade has a clientele that is worldwide, and what is more natural or right than that British coal shippers, failing to get supplies in England for their trade, should turn to other producing countries to piece out their shortage?

A year ago we were seeking by every means to establish an export trade in coal. Today we have it. We intend to keep it, too. It happens that the sudden expansion in offshore shipments comes at a time when production is below normal because of the shortcomings of the railroads. Were we not thus handicapped, the export movement would cause hardly a ripple on the surface of the American trade.

Other parts of the country have just as much right to demand an export embargo on cotton and cotton goods, shoes and other products from New England, on the ground that the price to them is excessive through the bidding up of prices by needy foreigners as New England has to demand that coal be cut off from foreign shipment because unless that be done, the price to her will be too high. We have just as reasonable basis to ask that no more wheat be shipped to hungry Europe because that demand on top of our domestic need makes us pay too high a price for bread. And so with other food and manufactured products, including gasoline.

An export embargo on any commodity today would be but thinly-veiled price regulation, and the coal industry wants no more price regulation. We doubt if any section of the country, or any industry really favors further governmental regulation of business. The recent disclosure of profits in textiles in New England gives cause for scant sympathy on the price these same manufacturers are now required to pay for the coal which they use.

Embargoes on foreign shipments have been proposed before as remedies for high prices at home and have always been discarded as poor national policy. We have no wish to engage in sectional legislation.

Futility of Embargoing Exports of Coal

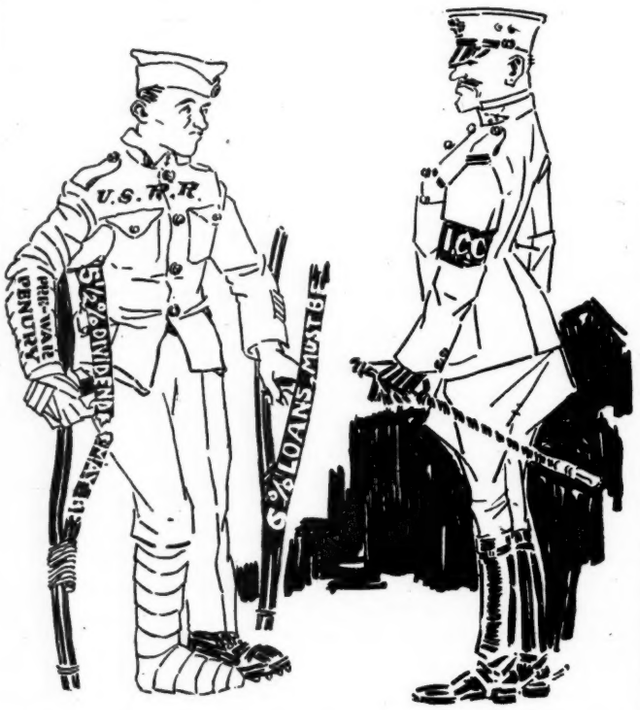
EMBARGOING coal for foreign export, as proposed by congressmen from New England, is another attempt to discriminate against coal. Had the scheme the slightest possibility of achieving the results that its sponsors hope for, it would deserve consideration. But let us examine into the merits of this latest move to pick out coal for such particular and drastic treatment. The basis for the proposal is that the coal that New England needs is being taken away from this country by foreign buyers. The figures for April show that an exceptionally large proportion of the coal dumped at the Atlantic tidewater ports has gone to export markets and that New England has received a correspondingly small share. About 2,000,000 net tons of bituminous coal were exported in bottoms in April and but 700,000 tons shipped coastwise to New England. This is at the rate of 24,000,000 net tons of offshore export, compared with from 4,000,000 to 6,000,000 in prewar normal years, and less than 9,000,000 net tons by water to New England, compared with requirements of from 12,000,000 to 15,000,000 tons. Something has gone awry. The reason is well known. The buyer on foreign account has offered more money for the coal and it has gone abroad. Plainly New England is forced to bid in the world market for coal by water, to the extent of more than half of her requirements. There is nothing involved but the price. New England has coastwise freight rates that are fixed and, if anything, that are discriminatingly low in her favor. Boats are available. The Shipping Board will supply all the boats for this service for which there is call. It is unquestionably true that New England is against a hard situation, due to the congestion of the rail gateways through which come in normal times from one-third to one-half of her soft-coal supply from the all-rail suppliers located in the northern Appalachian coal fields.

But though she is in a hard case, would it be bettered if, to accord with her wish, exports were prohibited?

What might be expected to happen should export of coal be prohibited from tidewater ports? If the step is taken it will be solely for the relief of New England and cutting off exports to Canada would be of no assistance. An absolute embargo on foreign sales at tide would at once cause a drop in price. New England would get all exported. It is not required and if it were bought and the coal she desires, because aside from ship bunkers there would be left no other large buyer. But New England could not begin to take the coal that is now being shipped, the port facilities would limit its receipt. Furthermore, the conditions on the railroads in New England are no better than elsewhere and these roads could not carry such quantities of coal from tidewater ports inland to consumers. At the most, from 300,000 to 400,000 tons per month of the 2,000,000 that are going to foreign countries, added to what is already going coastwise, would break the New England demand. And what of the remaining 1,600,000 tons that would be cut off from the export market? Who would get that? No one. The railroads could take no more west from the southern West Virginia fields that are furnishing the bulk of this export tonnage. If exports are cut off, production of coal will be automatically curtailed. The same is in large measure true with respect to the railroads serving the port of Baltimore. Beyond question, Europe is in desperate straights for coal or the demand would not be so strong. To deprive foreign consumers of the fuel they need so badly in order to satisfy the desires of a small section of our domestic consumers would involve the United States in a breach of good faith. Italy is one of the heaviest foreign purchasers of our coal. It is somewhat difficult to conceive the administration acquiescing in a move to thus adversely affect that country with which our diplomatic relations are now proceeding so unpleasantly.

An attempt to stop exports was made during the coal miners' strike last November and December. Not a pound of coal was to be spared to foreign consumers in November and the lid was clamped on tight by the Central Coal Committee acting for the Fuel Administration. The emergency was great and the decision had the support of the country and was not opposed openly by foreign governments. Individual pressure, however, was so great that coal was exported in considerable volume. Permits were issued one at a time, for good reasons in each case. The total was over 700,000 tons in one month.

Another War Cripple Who Needs National Rehabilitation



SECOND LIEUTENANT I. C. C. (*Loquitur*): Salute! Don't you see my shoulder straps?

The railroads, permitted to make dividends of only 5½ per cent and graciously allowed to borrow money from the revolving fund at 6 per cent, are truly the sorriest of war cripples. In fact the strongest of them that are now in the market to sell bonds are offering to pay 7 per cent for the accommodation and to get it have to give the best of security.—*News Item.*

Gunite Forms an Excellent Material for Covering Mine Buildings

Frame Buildings with Gunite Covering Possess Many Advantages Over Similar Structures Covered with Sheathing and Clapboards—They Are Cheaper in First Cost, Nearly Fireproof and Only the Trim Requires Repainting

MUCH has been written about the use of the cement gun around coal-mine plants, but most such articles have dealt with its utilization underground. One of the most important places where the gun can be employed to advantage is in the construction of the buildings comprising the surface plant.

The cement gun is a relatively new addition to coal-mine equipment, albeit a valuable one. There are so many reasons why a gunite-constructed building is well adapted to coal-mine plants that it is natural to inquire why this type of building has not been more frequently constructed. The answer is that the cement gun is a newcomer as a piece of mine equipment and the production problems that it has aided in solving have been located underground, where no other solution was feasible.

Let us cite a concrete case—this is not intended as a pun—where gunite has been used in the construction of buildings—the plant of the Valley Camp Coal Co. This concern is located at Parnassus, Pa., and is operating in the Thick-Freeport District that lies adjacent to the Allegheny River.

Experiment with Gunite Coating Successful

While the steel tipple at the plant of the Valley Camp company was under construction it was realized that the time was not far off when some thought would have to be given to the construction of the remaining surface units. The officials of the company had practically determined to construct these buildings of cinder-concrete blocks and some of this material had already arrived on the ground. It was finally decided, however, to alter the plans and construct frame buildings with a gunite exterior, utilizing for that purpose a cement gun that had already been purchased.

As there was no mining town nearby that the company officials could visit in order to make inquiries as to the effectiveness of this type of construction, and learn what advantages, if any, it had over other types, it is apparent that the buildings were constructed more or less as an experiment. A recent conversation with the officials at Valley Camp proved that they are highly pleased with the result of their experiment.

Why are gunite buildings peculiarly adapted to coal-mine plants? In the first place, this is the only type of low-cost construction available today wherein an ideal dead space between the exterior and interior walls of a building can be assured. This dead space is desirable in any construction in order to prevent the entrance of cold air in the winter and assure the exclusion of heat in the summer.

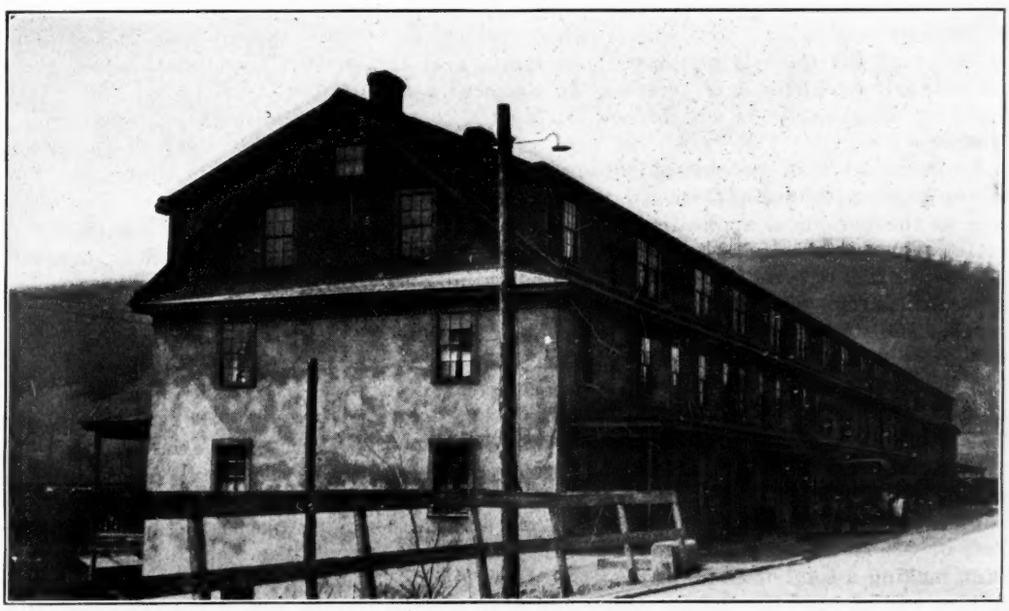
Wall Space Must Be Void of Air Currents

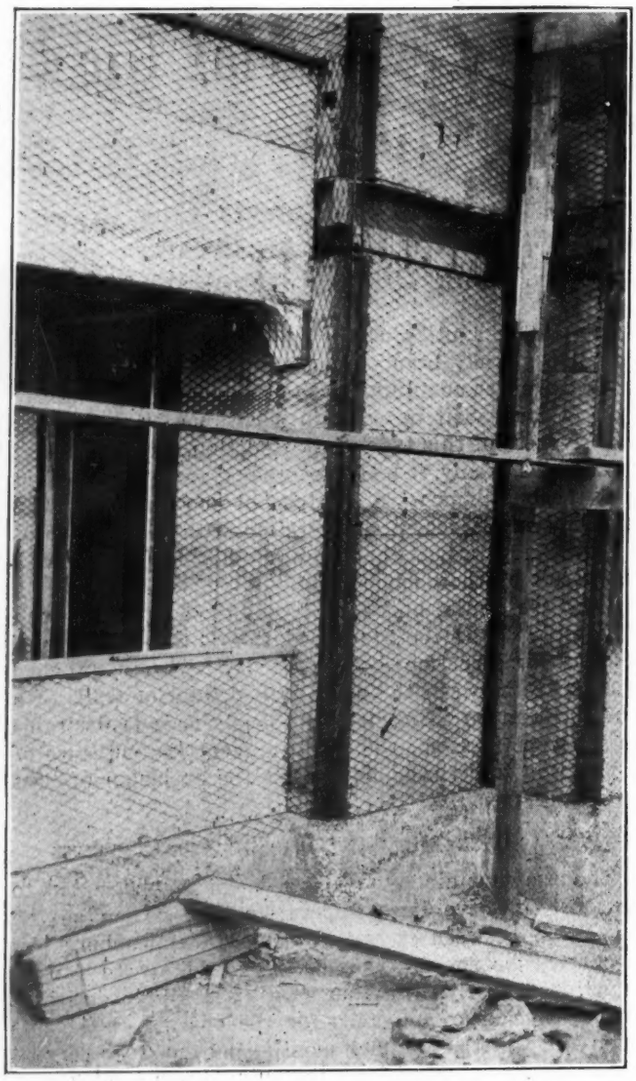
The stagnant air acts as an efficient insulator, but to be most effective it is imperative that no contact be permitted between it and the outside atmosphere lest a current be set up, causing the dead air to fail to function properly. Furthermore, it is highly desirable that no means of entrance for the outside air be left open since in the summer months the moisture carried by warm air entering from the outside will condense on the cool interior surface of the walls, thereby making the building not only damp and unhealthy for habitation but simultaneously hastening decay of the timbers.

Effective dead-air space is a most important factor in the construction of buildings where the means of heating

Gunited Tenement

House comfortably shelters seventeen families. The walls are inexpensive, fireproof and attractive. They keep the house warm in winter and cool in summer, as neither the heat of the inside in winter nor the heat of the outside in summer can pass through them.





WALL PREPARED FOR RECEPTION OF GUNITE

Over the studding is spread two- or three-ply tar paper, applied by using ordinary carpet tacks. Over this again No. 15 gage galvanized poultry wire of a 2-in. mesh is stretched and lightly fastened with fence staples.

during the winter months is scant or inclining toward the inadequate. This type of construction is, therefore, particularly suited to those plants where power for operation of the mine is purchased and steam heat is not available or where it is necessary to conserve heat if the buildings are to be comfortable during the cooler months.

Another factor of considerable import is that the upkeep expense connected with a building of this type, such as the periodical application of some sort of protective paint, is small. This feature was recently made the subject of a special investigation by the authorities of the Nashville, Chattanooga & St. Louis Ry. This company constructed of gunite the side walls of a large number of section houses along its lines.

The report made in this investigation shows that the painting of such houses at present prices would cost $312 every six years on a house wood-wall with about 2,600 sq.ft. of surface, against a charge of $171 for painting the trim on the gunite-covered buildings. The original cost of the gunite houses was 22c. per square foot, or $253 for the gunite and $95 for painting the trim, making a total of $348, against a cost for a single shiplap will of $105 for the sheathing and $173 for the painting, or a total of $278. It will thus be seen that in six years this railroad will have saved $71 on the gunite building over the cost of a single-wall wood building. The latter type, incidentally, is ill adapted to a rigorous climate such as that of the Pennsylvania coal districts. Apart, however, from the economy of the gunited building is its attractive appearance.

Application of Gunite Reduces Fire Risk

Still another consideration favorable to gunite is the fact that a cheap insurance rate can be procured where this type of construction has been used. Most present building codes have not provided for the gunite structure, as it is relatively new. In comparison with other masonry walls the exterior coating of this type of building is thin. However, the same end has been achieved as that reached with the thicker walls, although the construction is entirely different. Permanence and strength are present, for a reinforcement of expanded metal or some other suitable mesh is always employed as a background for the cement. The advantage of this type of building around the mines lies in the fact that the gun is always available for quick construction, as the mine equipment and regular operators are employed on this outside work.

All the buildings at Valley Camp are of simple frame construction except the repair shop, which is built of cinder block. For such frame structures three-ply tar paper was fastened to the studding with ordinary carpet tacks. This paper was applied horizontally, beginning at the bottom of the wall and working upward. At the vertical joints of the paper the ends were overlapped 3 in., while at the horizontal joints a 2-in. overlap was employed. It is essential that the ends and sides of the paper courses overlap slightly in order to more fully guarantee the existence of an effective air space between the outer and inner walls. Care was taken to see that the paper was drawn taut so as to avoid sagging.

Wire Mesh Completely Inclosed by Gunite

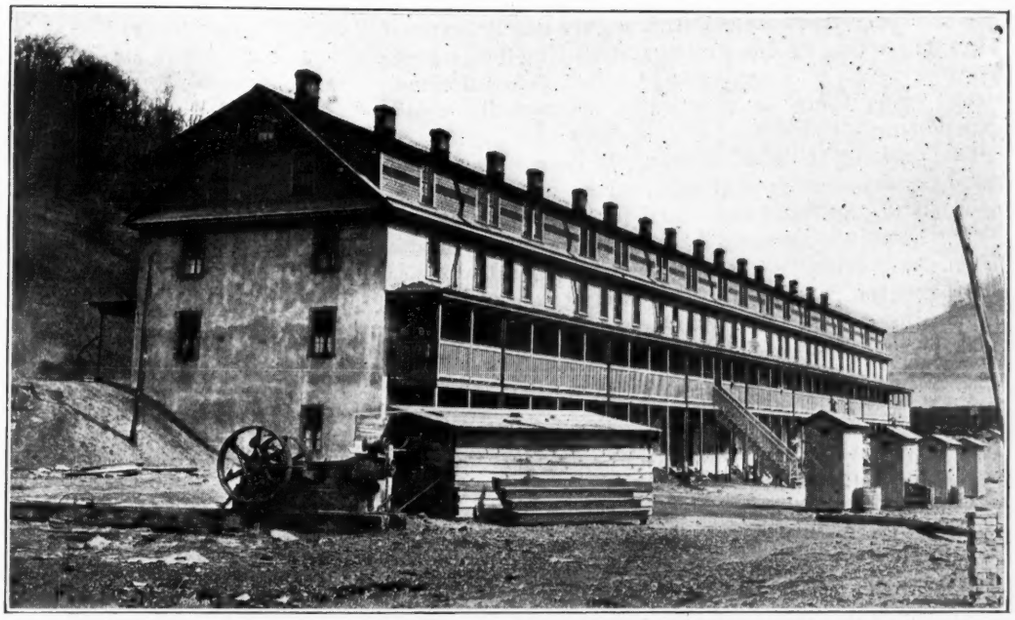
Over the paper No. 16 gage galvanized poultry wire with a 2-in. mesh was stretched. This was also drawn tight and fastened with 1½-in. galvanized fence staples. The netting was overlapped about 4 in. at the vertical and horizontal joints, and the adjacent courses or sheets were securely fastened together. When the staples were applied they lacked about ¼-in. of being driven home. This was to allow the cement mortar to entirely inclose the wire.

In building the repair shop at this plant the cinder blocks were used which have already been referred to as having been purchased. These blocks were laid with rough-cut flush joints ½ to ⅝ in. thick. The surface was then covered with gunite until a thickness of ¾ in. had been attained. It was necessary to wet the walls before applying the cement in order to prevent a too rapid absorption of the water in the gunite such as would occur if the blocks were dry. This coating has assured an absolutely dry interior although the dead-air space is not as prominent a feature in this type of building as it is in one of frame construction.

The cement and sand were mixed dry, one part of cement being used to three of sand. After mixing the material was passed through a ¼-in. mesh screen before being placed in the gun. It was found that sand that contained a small amount of moisture gave better results than one that was perfectly dry, as it hydrated more easily and at the same time did not cause so much dust.

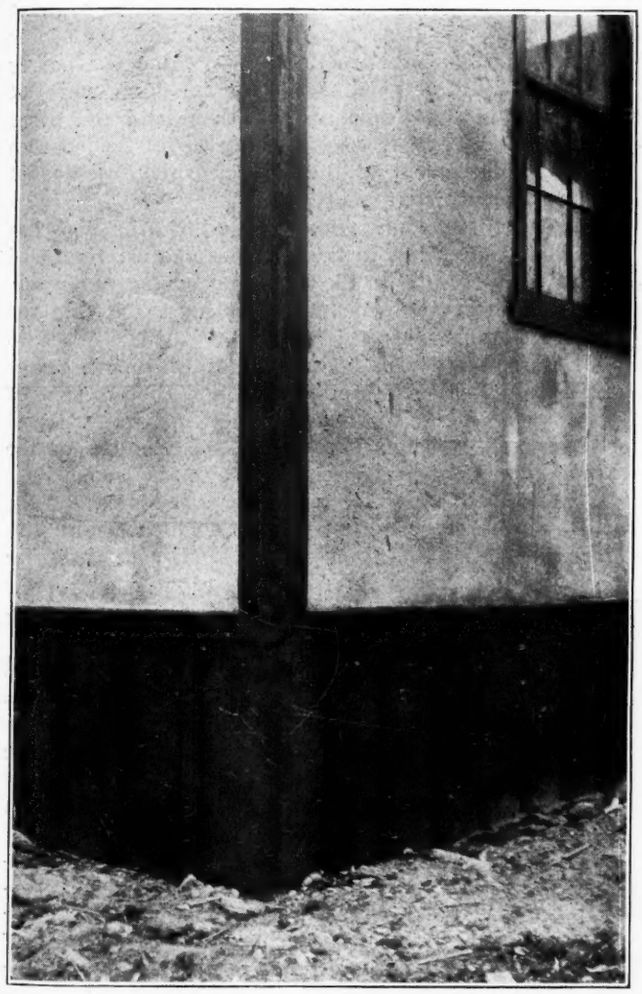
Rear of the Tenement

The building stands, as is characteristic of Pennsylvania, on a steep hill. Consequently entrance in the rear can be made to a ground floor which is beneath the level of the road in the front of the building.



This mixture also gave a more uniform flow through the gun. Where any of the dry mixture was allowed to stand over night it was rescreened the following day.

Many finishes can be given to a stuccoed surface, but perhaps the best and most practical one for mine buildings is that which is left by the gun itself or the so-called "stipple" finish. This was the type chosen at Valley Camp. A smoother finish, such as one left by a trowel or float following the gun, gives less surface for the ever-present dust and soot to settle upon, but on the other hand is a little more costly. As the finished wall can be easily cleaned with water, no matter what the character of the final surface, it is, of course, more practical to use the cheaper construction.



CLOSE-UP OF A CORNER OF THE BUILDING

As this type of building is not so subject to dust and soot as are the structures around the tipple the finish is made rougher. The natural or "stipple" finish is, from an artistic point of view, much preferable to one which is smoother. It is, needless to say, a trifle cheaper also.

Cost data on the Valley Camp construction would be interesting, but unfortunately no records were made by the officials. It is believed, however, that the completed buildings have not cost any more than similar structures having weatherboard sides. Estimates made for other building work show the comparative costs of gunite and wood-covered houses, respectively, are about as estimated in the accompanying table; the figures being computed in costs per square foot of wood-covered wall surface:

WOOD-COVERED HOUSE COSTS

	Cents
2 x 4-in. studding spaced on 16-in. centers at $70 per M....	4.2
Carpenter work placing studding at 60 per cent of lumber cost	2.5
Sheathing at $70 per M (making no allowance for waste)..	7.0
Placing the sheathing ($30 per M).....	3.0
Building paper over sheathing.....	0.5
Placing building paper.....	0.5
Siding at $100 per M.....	10.0
Allowance of 20 per cent for lapping and cutting.....	2.0
Placing siding ($40 per M).....	4.0
Painting	7.0
Total cost per square foot for wood.....	40.7

The following figures are computed per square foot of wall surface covered with gunite 1 in. thick:

	Cents
Studs and carpenter work (same as for the wood-walled buildings)	6.7
Wire placed behind tar paper and over studs to prevent sag	0.5
Tar paper (2-ply Barrett specification).....	2.5
Placing tar paper	1.0
Reinforcing mesh	3.0
Cost of placing mesh.....	2.5
Gunite material: One bag cement, 75c.; 3 cu.ft. sand, 25c... (This amount will cover 22 sq.ft. of surface 1 in. thick.)	4.5
Cost of placing gunite (labor, $40 per day)..... (An average of 1,300 sq.ft., 1 in. thick was covered daily)	3.0
Power and engineer.....	1.0
Depreciation of equipment.....	1.0
Total cost per square foot.....	25.7

In addition to the saving in first cost, amounting to 15c. per square foot of wall surface, there is no comparison between the completed gunite buildings and those of a similar design but constructed entirely of wood.

The gunited structures at Parnassus are nearly fireproof. They are warm in the winter and cool in the summer. They present an attractive appearance, being decidedly neat, while there is practically no periodic upkeep expenditure.

One detail in the application of the cement that should not be overlooked is that of securing a uniform color over all of the building. On one of the buildings at Valley Camp the coloring is not uniform. This resulted from the moving of the operating scaffold to a lower level and the renewal of the guniting process without first using a brush wet with water to remove the dust that had settled upon the previously "shot" gunite.

Mine Water So Clean It Could Be Used

An N-O gun model, as manufactured by the Cement Gun Co., Inc., of Allentown, Pa., was used for the guniting. An ordinary type of mine compressor supplied the air, which was delivered to the gun at a pressure of about 30 lb. to the square inch. A pump situated in the fan house furnished the water, which was supplied at a pressure of 65 lb. to the square inch. Ordinary water from the mine was used as at this operation this is unusually clean. It is important that clean water be employed. At most mines it would be impractical to use mine water because of the sediment ordinarily carried, which might interfere with the operation of the gun and at the same time discolor the mortar.

Gunite construction compares even more favorably with buildings made of brick. The gunite structures are not as costly, have the same relative fireproof qualities, are warmer than the brick in winter, and present an appearance that is fully as attractive. They possess the added advantage that they may be cleaned at any time at practically no expense.

Carrying Out Burdensome Contracts

Release from Performance of Terms Agreed To Must Be Provided For in Contract—Damages May Be Recovered for Misrepresentation

By A. L. H. Street
Minneapolis, Minn.

A FIRM holding a contract to mine coal lands for a lessee asks the legal department of *Coal Age* for information as to its legal rights under the following stated circumstances:

The land contained two coal veins—one containing "very good coal," and the other being very low, ranging from 2 ft. 4 in. to 2 ft. 6 in. When the better vein had been worked the firm was practically out of debt and owned a valuable plant. Then the firm asked the other party for a new contract or an advance on the price of coal, "as we were not able to work this low vein at the old price as there were faults to cut, and it naturally cost more for labor." But the other party insisted that the firm proceed to work the coal, which was done. This compliance with the other party's demand has entailed heavy indebtedness.

"They insisted upon our working this unworkable coal," adds our correspondent, "which is the direct cause of our indebtedness. We would like your advice on the matter, as to whether we are lawfully forced to stand all or part of debt, and as to what procedure we should take in the matter. Also we would like advice as to the position of our personal property in case of a foreclosure and as to how we could protect it."

No matter how burdensome performance of the contract may be, the correspondence discloses no legal ground on which the firm is entitled to release from the terms of the agreement or to reimbursement for any part of loss entailed in working the coal.

"The general rule is that, where a person by his contract charges himself with an obligation possible to be performed, he must perform it, unless its performance is rendered impossible by the act of God, by the law, or by the other party, it being the rule that in case the party desires to be excused from performance in the event of contingencies arising, it is his duty to provide therefor on his contract. Hence, performance is not excused by subsequent inability to perform, by unforeseen difficulties, by unusual or unexpected expense, by danger, by inevitable accident, by the breaking of machinery, by strikes, by sickness, by weather conditions, by financial stringency, or by stagnation of business. Nor is performance excused by the fact that the contract turns out to be hard and improvident, or even foolish, or less profitable, or unexpectedly burdensome." 13 Corpus Juris, 635-637.

One clause of the contract held by our correspondents provides that they shall "mine all of the coal that is practicable to mine," etc. Under this clause the operator is not permitted to work a bed of good coal and then avoid the obligation of the terms of the contract which provide so far as "practicable to mine" the poorer coal. If it was not "practicable" to mine the poorer vein, that would be good excuse for not doing so. But the firm could not work it and then hold the other party for any part of loss in doing so, in the absence of special agreement to that effect, which we do not find in the contract in question.

Apparently the only respect in which the firm has protected itself at all in the contract against increased cost of production is in the following quoted paragraph appearing after the schedule of prices to be paid the firm for mining coal:

"It is understood and agreed that the above prices are based on present mining scale and that in case of any changes in the future the price will be increased or decreased sufficiently to meet the changes in the cost of production made necessary by such change."

This will authorize an increase in the price of the coal to cover increasing labor costs commensurate with advancing mining scales. But it will not authorize recovery on account of cost of production merely entailed by unexpected difficulties encountered in carrying out the contract.

What has just been said, however, should be qualified to the extent of saying that if the other party to the contract misrepresented the character of the coal veins, the firm could recover damages based on a difference between the cost of working the veins had the land been as represented and the actual cost and the actual cost of working them.

Should the chattel mortgage referred to by our correspondents be foreclosed, title to the mortgaged property would be lost unless redeemed before sale of the property by payment of the debt, interest and costs of foreclosure. Should the partnership debts exceed the firm's assets, with no fair chance of putting the concern on sound footing again, voluntary bankruptcy proceedings would appear to afford the best means of "wiping the slate clean" before starting in upon a more promising venture.

Successful Methods of Working Two Coal Beds Separated by Six Feet of Slate

A Scheme of Mining Developed to Suit Conditions in One Part of a Mine Failed in Another—Methods Were Then Worked Out Suitable to Each Portion of the Operation

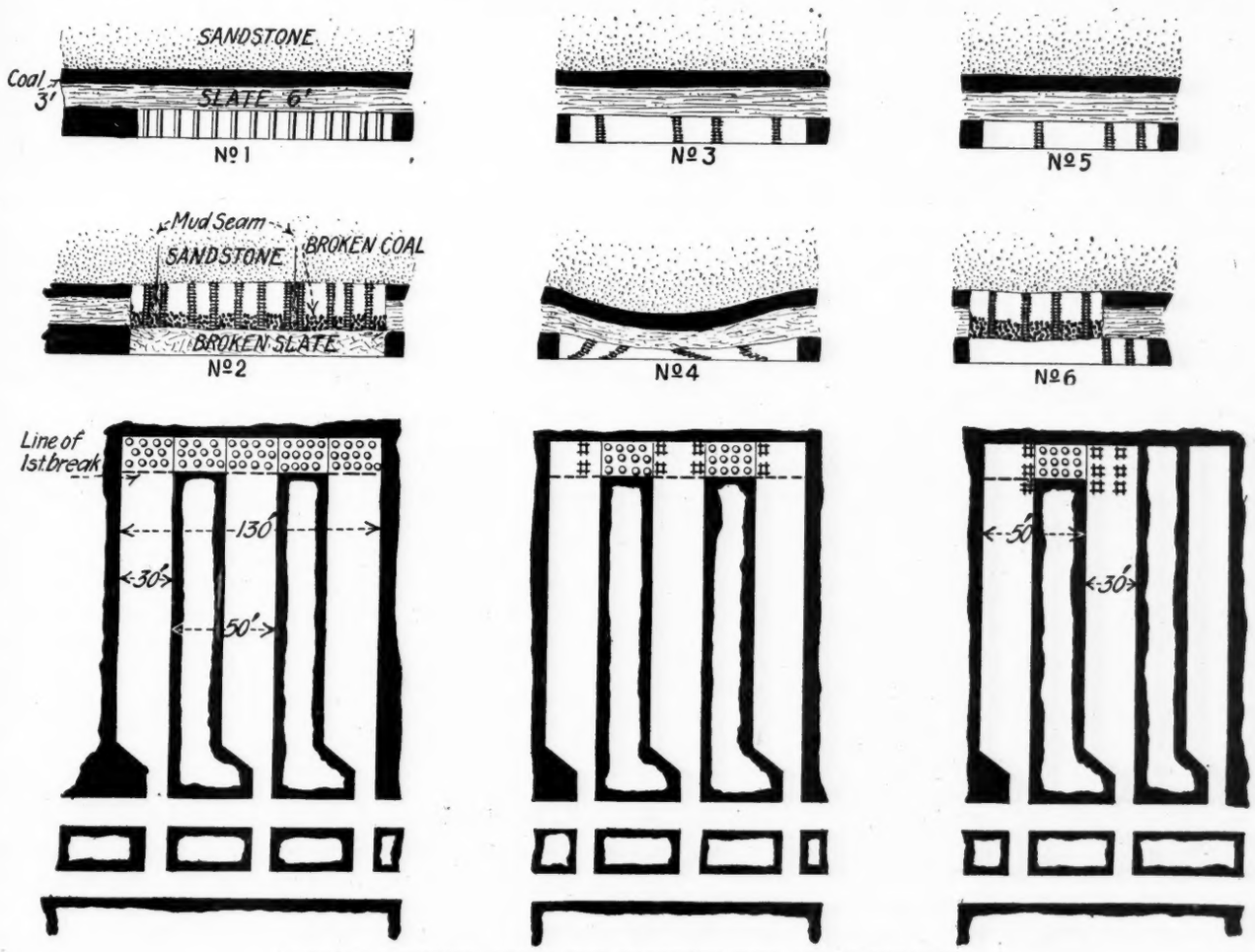
By DEVER C. ASHMEAD
Tarrytown, N. Y.

AMONG difficult mining problems is that of working two coals separated by only a few feet of strata—adjacent or superincumbent beds, they are often called, but both the names are inaccurate and only excusable because of the inadequacy of our vocabulary. Such beds can be found both in the anthracite and bituminous regions, and the difficulties they present are variously met, or not met, by the companies which are confronted with them. The Connell Anthracite Mining Co. at its mine at Bernice, Pa., has solved this problem for its own operation, and a recital of its methods may be of assistance to the managers of other mines who are confronted with like difficulties.

The Connell company has at Bernice two beds of coal so close together that they cannot be mined separately, and yet they are too far apart to be worked profitably as one. The lower seam is seven feet in thickness and is overlaid with six feet of slate, on top of which is another bed of coal varying in thickness from two and one-half to three and one-half feet.

The thickness of the slate between the two beds of coal is too great to be handled profitably. Over the upper bed lies a sandstone roof forty to forty-five feet thick, above which is slate and surface soil. The minimum cover is sixty-five feet, but a maximum cover of about 165 ft. is at times reached. Other difficult features that have to be contended with are the numerous fissures filled with mud that are found in the sandstone.

Practically every method of mining that was suggested by anyone was given a fair trial, but without satisfactory results, until the idea was conceived that it might be possible after mining the lower bed to drop the upper one and load out the coal. The success of this scheme depended entirely on the sandstone roof



VARIOUS SCHEMES TRIED FOR WORKING TWO ADJACENT BEDS
Procedure successful in one part of the mine failed where heavier cover was encountered

remaining up until artificial support could be provided. The first experimental work was done where the coal had the lightest cover. At this point the method employed was an entire success, but considerable difficulty was encountered when the cover became heavier.

The procedure followed consisted in robbing two adjacent pillars for a distance of twenty-five to thirty feet from the end of the room and supporting the roof by numerous props. The robbing of two pillars made the total span of the roof equivalent to a distance of 130 feet on the first two pillars and on the second two and thereafter 100 feet, provided the rooms were thirty feet wide and driven on fifty-foot centers, thus making the pillars twenty feet wide. This procedure is shown in the accompanying illustration under section 1.

While the robbing is in progress it is necessary to support the roof with props. As soon as the two pillars are drawn back the proper distance the props are drilled and the holes in them loaded with dynamite and fired. This removes all support to the roof, which falls, and all the overlying strata, as far up as the sandstone, come down. This, of course, includes the slate and the small bed of coal.

The next step is to build a series of cogs on top of the fallen slate to support the new roof. These cogs are about five feet square, are placed on twelve and one-half feet centers and are filled with rock. Wherever it is necessary, because of mud seams in the roof, two cogs are placed, one on each side of the fissure, but ordinarily it is sufficient to build the cogs on twelve and one-half foot centers, as already stated.

After the coal has been dropped mine tracks are laid to the fall, and whenever possible these are carried on top of the fallen slate. This considerably lessens the distance that the coal must be moved. The coal is next loaded into mine cars and taken to the surface.

It would be a comparatively simple matter to carry on this method of working if the conditions of the roof remained the same in all parts of the mine. Unfortunately, however, the thickness of the overlying strata does not remain constant but, as has been previously stated, greatly varies, much augmenting the weight to be supported.

At first the coal company, in the extraction of coal where the overburden was heavier, attempted to employ the system that it had used successfully under light cover. The sandstone roof, however, would not stand up under the greater weight arising from the wide and comparatively lightly supported span. It broke and fell when the props were shot, making it impossible to remove the small bed of coal. As this scheme failed it was necessary to try another. The middle portion of the illustration shows what this method was.

A row of cogs was built on each side of the pillars to be robbed, the pillars were then removed and the coal dropped by removing the cogs one at a time. This did not work successfully. Because of the long span the roof rode the cogs and when one or two were removed the remainder could not withstand the load and failed, causing the roof to break.

It was therefore necessary to try another method. This time instead of robbing two pillars at a time it was decided to try robbing one. A row of cogs was built on each side of the pillar to be removed, to take care of the weight, and sufficient cogs were placed in the room the roof of which was to be supported. A total span of 50 ft. resulted instead of the 130 ft. span.

After removing the coal from the pillar the cogs on one side were removed, allowing the upper coal to drop, after which the sandstone was supported by another set of cogs in the manner previously described under the method used for light cover. In this case, as in the first instance, a set of cogs was placed on each side of any mud fissuer that might be discovered. So far this system has been successful but it has not been in use a sufficient length of time to determine definitely whether or not it will continue to be satisfactory. This method is well shown in the third section of the illustration.

Having made the first cut under light or heavy cover, a second cut is made on the same pillar or pillars. The third cut is then made on the adjoining pillars and thereafter the work is carried on in steps with the idea of keeping the retreating face across a number of pillars in a line of steps at about an angle of 45 deg. to the direction of the rooms. As soon as sufficient roof has been undermined so that it will break properly it is allowed to do so, relieving the pressure on the remaining supports.

In the past a great many mines have been abandoned as failures, properties have been condemned, and much coal has been lost because of the difficulty encountered in operating two closely adjacent beds of coal. Various systems have been tried and in a few cases have been successful.

The success of the system of mining just described, it is hoped, will lead other operators who are confronted with a similar problem to seek its solution. It is quite possible that an adaptation of this method may be found that will be as successful in their operations as it has been in those of the Connell Anthracite Mining Company.

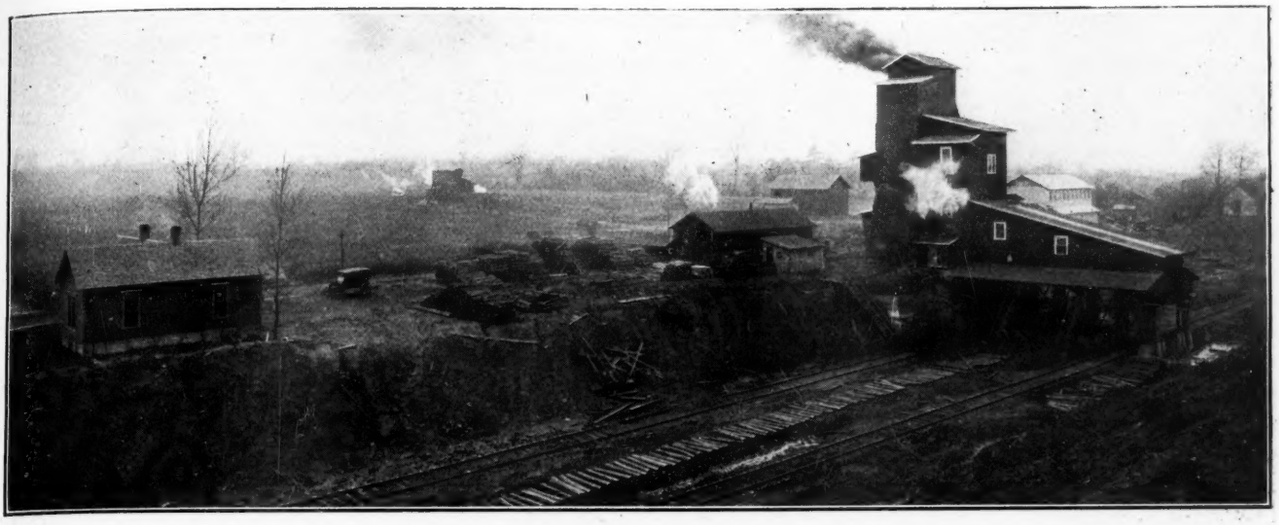
Coal and Coke Lead Advance in Wholesale Prices During April

LARGE increases in the wholesale prices of many important commodities again took place during the month of April, according to information collected in representative markets by the U. S. Bureau of Labor Statistics. The bureau's weighted index number, which registered 253 in March, rose to 265 in April. This represents an advance of nearly 4¾ per cent.

The most notable examples of price increases were found in the group of fuel and lighting materials, the increase in this group as a whole being 11 per cent. Bituminous coal and coke were responsible in large measure for the resultshown. Food followed next, with an increase of 9¾ per cent, due largely to the recent sharp advance in sugar and potatoes. In the group of lumber and building materials prices continued steeply upward with an increase of 5¼ per cent over March. The groups of farm products and chemicals each showed an increase of over 3 per cent, while smaller increases were recorded for metals and metal products and for housefurnishing goods.

Experimental Mine Has Foreign Visitors

H. IKECHI, a mining engineer in the service of the Mitsubishi Mining Company of Tokio was a recent visitor at the experimental mine of the Bureau of Mines at Pittsburgh. Other foreign visitors were Kjell Lunde and Florin Wahl, of Christiania, Norway.



Where Stripping Is Regarded as a Regular Adjunct to Underground Mining—II

This Concluding Article Has Reference to the Underground Mine at the Rowland Power Co's. Plant—While Much Money Has Been Spent at That Three-Unit Operation, No Capital Has Been Needlessly Wasted in Building Permanent Structures for an Impermanent Industry

BY DONALD J. BAKER
Pittsburgh, Pa.

AT NO. 6 mine of the Rowland-Power Consolidated Collieries Power Plant near Terre Haute, Ind., which takes out the coal which is too deeply covered to be redeemed by strip pits Nos. 3 and 9, the surface equipment is of such odd nature as may be required to meet the exactions of the trade for which the Illinois and Indiana fields have to compete, a trade that is periodically most discriminating. In this trade region the usual sizes of cleaned coal are generally in greater demand than others, but there are many times when certain less usual sizes are desired.

In the matter of tipple design the Indiana operators must pay careful attention to their trade, as competition is keen and the product must be well-nigh perfect. Furthermore they must compete with western Pennsylvania and West Virginia coals in the open market. The going is therefore not of the easiest.

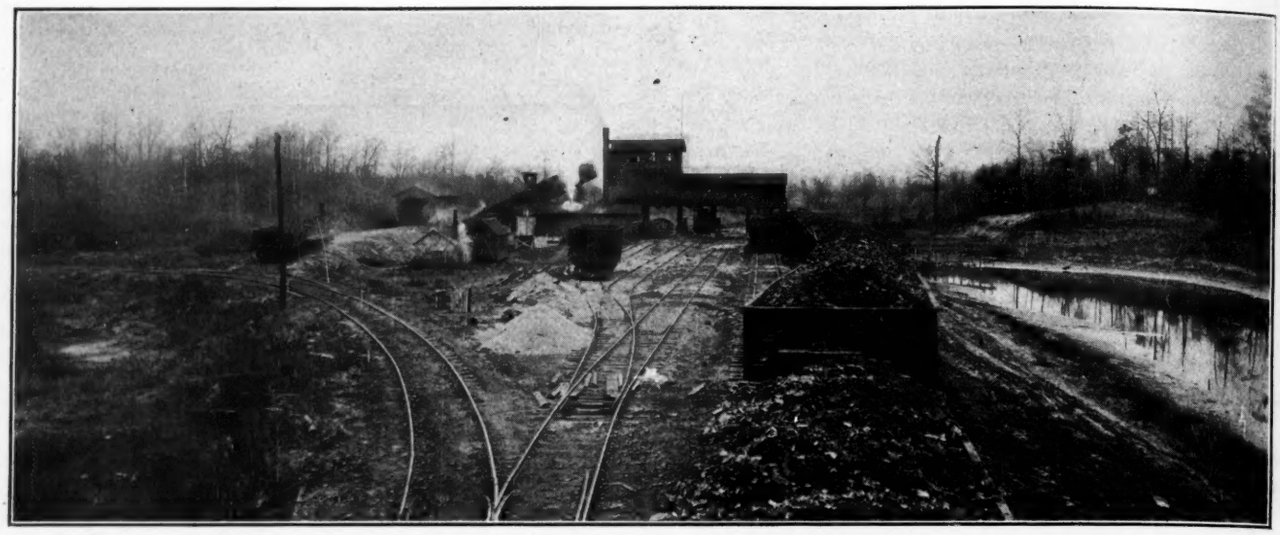
The tipple at No. 6 mine, like those of the stripping operations, is constructed of wood. A two-compartment shaft measuring 19 ft. 6 in. x 12 ft. has been sunk to the coal, which at this point is 60 ft. from the surface. Mine cars are hoisted up this shaft on Prox self-dumping cages. During odd hours of operation this shaft is used also for lowering materials to the mine. No great amount of water was encountered in sinking, and as a result the shaft is not concrete-lined but curbed for a distance of 22 ft. from the top with 6 x 8-in. timbers. The balance of the distance is lined with 4 x 12-in. planking. Thus at minimum expense a good type of temporary construction is provided.

The site of the tipple was determined by the proximity of No. 9 strip pit. In order that the railroad tracks which serve this operation might be used also for No. 6 mine a cut was made giving a suitable and easy grade between No. 9 mine and the tipple that prepares the stripped coal. This cut, which is shown in the illustration of No. 6 tipple, was made by the large Marion shovel on its way to its destined work at No. 9 pit.

The cars as they are brought up on the cage discharge their contents into a weigh basket. The coal

INTERIOR OF A ROOM IN NO. 6 MINE

Here the coal comes down in chunks so large that they must be broken up before they can be loaded and hauled to the surface. No need in this mine for a miner to bend his back when moving about the room.



GENERAL VIEW OF THE STRIPPING TIPPLE, UNLOADING TRACK AND LOADING YARDS

In this building the coal from the stripping operations is given careful preparation before it is loaded upon railroad cars for shipment to market. The coal comes and goes in standard railroad equipment.

after being weighed passes into a hopper that feeds a 10-ft. shaker screen. The screening equipment has a capacity of 5,000 tons in 8 hr. The tipple was designed by the Link-Belt Co., which also furnished the tipple equipment. The sizes usually loaded are 1¼-in. egg, 4-in. lump and screenings. Arrangements have been made whereby, in the event of a breakdown, the tipple can still be operated, run-of-mine, however, then being the sole product. The screens are operated by engine.

Adjacent to the tipple and the wood head-frame is a building housing the boiler house and engine room. This building also is of wood construction. For the operation of the cages a 20 x 40-in. Crawford & McCrimmon hoist engine has been installed. This unit has a 6-ft. drum which winds a 1¼-in. cable and is equipped with steam and foot brakes. The mine cars used are of 4-ton capacity.

The power-generating equipment, which is in the same room as the hoist, consists of one unit of 160 kw. capacity. This is a 250-volt direct-current generator of General Electric make and supplies energy for the operation of trolley-type locomotives. The needs of the mine foreshadow a larger installation and a second unit of 200 kw. capacity is now being installed. Both of these generators will be driven by Ball & Wood steam engines.

Removal to Another Mine Is Kept in Mind

In the adjacent boiler room a battery of two Brownell boilers has been erected. These deliver steam at a pressure of 110 lb. per square inch. At present additional installation is here being made to assure successful operation of the new direct-current generator. The new boilers are duplicates of the other two. All will be hand-fired with coal delivered to the boiler room

PROVING THAT "INDIANA LUMP" IS NO MISNOMER

Looking at the level ground it is easy to see that the topographical conditions are as favorable as the nature of the material to be stripped

by mine cars taken off the cages at the surface landing.

The equipment at this plant cannot be considered as being of a permanent nature. The life of the mines is not a long one, yet an installation has been sought that will continue to be highly efficient until all the coal has been removed. The Rowland-Power Consolidated Collieries Co. plans to install such equipment as will be suitable for erection later at some other point. It is already operating ten mines located in five different sections of the state. Staunton Mines is the largest but not by any means the only operation of the company.

The airshaft for this operation is situated about 300 ft. from the main hoisting shaft. Here a 16-ft. reversible Crawford & McCrimmon fan is direct connected to an 8 x 16-in. steam engine of the same manufacture. This unit also is housed in a wood structure. Here is situated the manway, which is a vertical stairway from the foot of the airshaft.

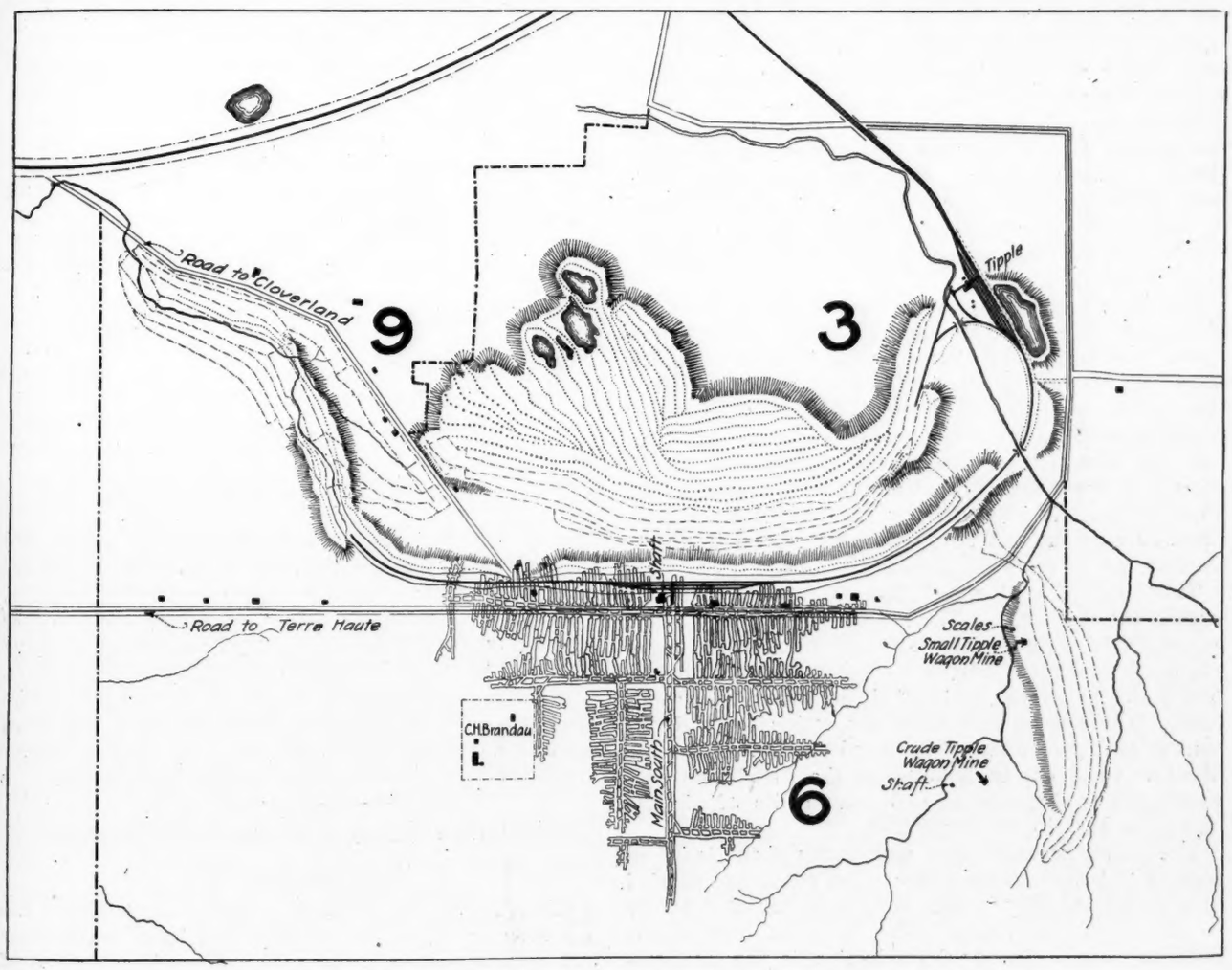
Miners' Bathhouse Simple But Sufficient

The bathhouse—under the law every mine in Indiana must have one—is an exceedingly well-designed building, but had it been built of brick with concrete floors it would not have been in keeping with the other buildings of the plant. It is, in consequence, a simple frame structure. As can be noticed in the accompanying illustration, a bay abuts each long side of the building. Nine shower heads have been installed in each bay, and water is delivered through the feed lines at a uniform temperature. This is accomplished by simply regulating the temperature in a mixer that feeds each shower supply line. Both bays are concreted, the floor being about a foot lower than that in the main building.

The advantages of this design are apparent. It has materially reduced the cost of building, for by this arrangement the main floor can be constructed of wood. The showers are adjacent to the benches and these are arranged crosswise to the main diameter of the building. A partition incloses each set of shower heads and there is no possibility of the water splashing out onto the floor proper. Coils of steam piping keep the building heated. These are situated in each bay but above a level that would permit accidental contact with them by the men while bathing. Hooks in the ceiling are provided for the clothes of 175 men.

One room of the building is used for the storage of first-aid and mine-rescue supplies and apparatus. Indiana does not have state insurance and as a result dressing stations have not enjoyed the attention that they receive in certain other localities where these buildings are quite frequently veritable hospitals.

First-aid and welfare work in this district is not as far advanced as in regions farther east. The absence of the compensation schedule is in a large degree



GENERAL LAYOUT OF STRIP PITS NOS. 3 AND 9 AND UNDERGROUND MINE NO. 9

This shows the underground and surface plan, the dotted lines clearly indicating the movements that the steam shovels have so far made in excavating the overburden

to blame for the slow progress of these activities. However, interest in these important phases of operation is spreading and it may not be long before Indiana operators appreciate to the same extent as their Eastern brethren the place psychology holds in the safe operation of a mine. Perhaps, too, the labor shortage has not been as keenly felt here as in other soft-coal districts.

This seems strange also, for throughout the Middle West the mining population is not such a cosmopolitan one as it is in the East, and the absence of foreigners is quite noticeable. It may be that the union is strong through the Central Field because community work in the Middle West is not on as firm a footing as elsewhere.

This will serve to describe the surface plant, but something should be said as to the underground workings. The floor of the coal underground is the same sandstone rock already mentioned, while the roof is fireclay. This formation is quite uniform throughout the tract. Despite the fact that the coal is not under a great amount of cover, especially in the acreage developed to date, the mine is dry. The general development scheme followed is the double-entry system with the rooms worked in panels.

Wide Pillar Keeps Water from Strip Pits

Where the rooms approach the stripping operations they are driven to within 50 ft. of the open. This provides a pillar such as will amply protect the mine against the entrance of surface water from the strip pits. After the mine has been worked out this pillar will be removed by the steam shovels. The width of the pillar was made such as to be consistent with the amount of coal that can be removed by the small shovel in a simple bench. A smaller pillar might have been left but it was feared that if less were provided it might not be a sufficient barrier against the entrance of the surface water that collects in such abundance in the open pits.

The main haulageways were so laid out as to afford maximum ease of developing the tract. "Butt" and "face," two terms well known where Eastern coals are mined, do not hold great significance in Indiana. Here the coal to a considerable degree lacks cubical cleavage, breaking rather with a conchoidal fracture. As a result the direction of the rooms is regarded as of secondary importance to that of the main haulageways, since the coal is as easily cut and shot down in one plane as another, and no appreciably increased resistance to air currents is offered.

This type of coal allows the mine to be laid out with great regularity. The room entries are at right angles to the main haulageways and the rooms at right angles to the room entries. The dip of the coal is practically negligible and but little water is encountered. These conditions allow the rooms to be developed in both directions off the room entries. A scheme like this could not be followed in the Pittsburgh bed, where gas is encountered and more splits of air are needed to sustain the ventilation.

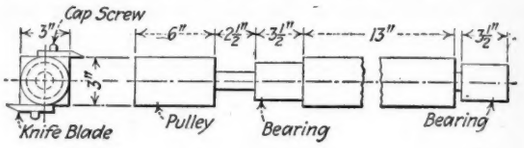
The panels between room entries are about twice as wide as in more eastern mines. The rooms are carried to a length of 200 ft. and have a width of from 20 to 25 ft. To provide a pillar 8 ft. of coal is left between rooms. Speed of production is the predominant consideration and maximum recovery suffers as a result. Sixty-five per cent recovery is considered fair in this district, the room pillars being abandoned at the same time as the panels. When the rooms have been carried to their full length and have broken through on each other the whole panel is abandoned. By this time the roof has started to squeeze the small room pillars and drawing them would be extremely dangerous.

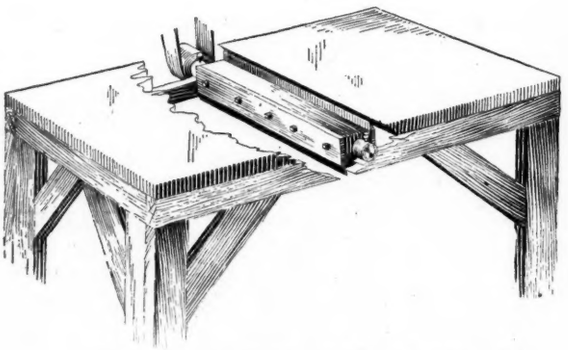
If maximum recovery is to be attained, fewer rooms should be alloted to a panel and a larger pillar left to sustain the roof until such a time as it can be withdrawn safely. Indiana, however, has plenty of coal at present and is not worrying much over the future.

Planer Made from Material on Hand At Mine Blacksmith Shop

IN many instances it is unnecessary for the coal operator to spend good money for tools and equipment of a simple nature if those needing these appliances have the proper inventive ability. The men in the carpenter shop at the Silver Creek Colliery of the Philadelphia & Reading Coal & Iron Co. wanted a small planer. When the planer was not forthcoming, the men "got busy" and built their own.

The accompanying illustration shows the arrangement and some of the details of the machine thus evolved.





PLANER WITH DETAILS OF MANDREL

The mandrel is a piece of steel three inches square and was finished in the machine shop. The cutting blades are thirteen inches long and are cap-screwed to the mandrel. The boxes are ordinary pillow blocks such as may be found in the scrap heap or around the works of many mines. The pulley is turned up integral with the shaft.

In operation this planer is run at 3,200 r.p.m. Two men, one at either end of the table, pass the work across the machine. Although the entire outfit is improvised, the results obtained are entirely satisfactory.

Secretary Payne Advises Coal Burners To Conserve Oil

BECAUSE of the acute oil situation, Secretary of the Interior Payne has requested the Navy Department and Shipping Board to provide coal-burning instead of oil-burning vessels, and the conversion of oil burners into coal burners.

Burning Eastern Coals Successfully on a Conveyor-Feed Type of Stoker*

Coking Coals Burn with Some Difficulty on Chain Grates—By Alternating Chain and Tuyere Elements and Making Ignition Temperatures High These Fuels Have Been Successfully Burned

By Loyd R. Stowe
St. Louis, Mo.

FOR the past two years the Laclede-Christy Clay Products Co. has been experimenting on a new forced-draft stoker for use with any of the many kinds of fuel found in this country. The boiler house of this company's Christy plant at 4600 South Kingshighway, St. Louis, has been, and still is being, used for experimental, testing and development work. Fig. 1 shows the test boiler and stoker.

The stoker used employs the conveyor method of feeding, i.e., it uses progressively moving chain-grate conveying elements to feed the coal through the furnace and to discharge the refuse to the ashpit.

Declaring that coals in which the resins are oxidized (that is, weathered) are little disposed to cake, an attempt is made to rapidly weather the caking coals on the grate by exposing them to currents of air under high temperature. Over twice as much air is delivered to the fire at the feeding end as is provided near the point of ash discharge.

At the outset it is necessary that we realize the full import of the term "conveyor feed." When the conveyor-feed grate is used the fuel is continually moved forward with the grate. The fuel bed, being supported on these moving grates, is positively conveyed from the stoker hopper, where fresh coal is introduced, to the discharge end, where the refuse is rejected to the ashpit.

Conveyor-Feed Stoker Does Not Disturb Coal

The feature of the conveyor feed that particularly commends its use is its handling of the fuel bed in a positive, definite fashion. By striking off the fuel evenly under a feed gate and then literally carrying it on through the furnace and over the point of ash discharge, this mechanism prevents in a large measure the evils of less positive feeding devices, namely, uneven fires, balled-up spots, and immovable clinker formations. So important are these advantages which the conveyor-feed provides and so thoroughly have the underfeeds demonstrated the great advantages of mechanical draft, that there are many builders who are now experimenting on and developing forms for forced-draft conveyor-feed stokers.

It is well known that there have been many failures in attempting to burn Eastern coal on chain grates. In fact, some have gone so far as to maintain that the undisturbed fuel bed of the conveyor feed is so poorly adapted to Eastern coal that it is useless to proceed further along these lines. Others have in all sincerity advised manufacturers to stay with the Western coals, where the conveyor feed rightfully belongs.

Now, one of the characteristics of the conveyor feed, it will be observed, is that the fuel bed is undisturbed during the so-called coking period or, more properly speaking, the period of destructive distillation. It is largely because of this feature that I have elected to relate specifically what has been learned about Eastern coals with conveyor feed—coals high in heat value and low in ash and including those termed semi-bituminous and caking. And it may be as well to state at this point what may be considered as the conclusion of this paper, namely: that the results of the experiments undertaken indicate that conveyor feeding can be used successfully with Eastern bituminous fuels.

For many years it has been quite clearly established that nearly every requirement of a successful stoker is lacking when burning caking fuels on chain grates with natural draft. The coal cakes almost immediately upon entering the furnace, high rates of burning cannot be secured, the combustible content of the ash is high, the admission of the air is not properly graduated to the requirements of the various stages of combustion, and the expense incurred for the maintenance of links is excessive. This is indeed a complete indictment, and with the sole exception that the automatic features are always in evidence, it may be said that the performance of chain grates on Eastern bituminous coals violates every requirement of a successful stoker.

It is well known that the caking property of Eastern coal is the most serious obstacle in the way of the successful use of this fuel on chain grates. In endeavoring to burn Pocahontas and similar coals it is observed that tarry oils flow through the fuel bed as a result of the application of heat at moderate temperatures. It is further observed that the coal under the arch is caked or coalesced by these tarry oils, and forms a sticky blanket that prevents the entrance of air through the coal and hence checks combustion and heat generation under the arch.

Causes of Coke Formation on Stoker Grates

In attempting to remedy this situation the most natural thing to do is to employ mechanical means to break up the caked fuel bed, and this is the course which the inventor almost invariably takes. In fact, the idea is prevalent that "a mechanical agitation of the fuel bed, for the purpose of breaking up the coke, is necessary or advisable when burning Eastern coals." So many statements have appeared similar to the one just

*Paper presented before the spring meeting of the American Society of Mechanical Engineers, St. Louis, Mo., May, 1920.

quoted that mechanical engineers have come to accept it as a basic fact. The results obtained at the experimental plant, however, have disproved this contention.

All bituminous coals have a small quantity of resin that flows when heat is applied. In certain varieties this resinous material has marked adhesive or binding properties and hence when it flows under the application of heat it agglomerates the coal particles into a primary mass. This mass is the starting point of coke formation and out of it true coke may be formed by further actions that take place in the fuel bed. It must be noted here that while *all* bituminous coals have this resinous content its adhesive or binding property is lacking in the Western or free-burning coals.

It appears that the higher the oxygen content of the coal, the less pronounced will be the primary caking tendency. Analyses on a moisture-and-ash-free basis show that Eastern coals contain less than half as much oxygen as Western coals of non-caking characteristics. Furthermore it is well known that Eastern coking coals lose their caking properties by weathering, and it has been determined that weathering causes coal to absorb oxygen and to increase in weight by an amount equal to the weight of oxygen absorbed.

Coal Can Be Weathered on Stoker Grate

The absorption of oxygen can be accelerated and be made to take place in the boiler furnace by producing high coal temperatures and accompanying these with a plentiful supply of air. In other words, this feature of weathering can be artificially carried on in an exceedingly short time. The oxygen absorbed apparently destroys the adhesive qualities of the resinous material referred to above and hence the primary mass from which the coke structure is later formed is not produced.

Again, when heat is applied to *any* bituminous coal a chemical rearrangement or breaking down to certain of its compounds takes place. This action produces the greater part of what is termed "volatile matter," the remainder coming from the resinous content. The initial product of this chemical rearrangement is no doubt further decomposed into a fixed gas and a tarry residue. This tarry residue has not in itself the properties of a strong binder, but it does build up and materially strengthen any primary coke structure that may already be present by leaving a film of carbon behind when the final breaking down into this carbon and fixed gas has taken place.

Heat and Air Prevent Caking Tendency

The foregoing theory would account for the non-caking performance of Eastern coals in the experimental work referred to in the present paper, and in its essentials seems to be the theory most commonly accepted by coal and coke analysts.

In the experiments with the new stoker the ignition temperatures are extremely high and at these temperatures considerable amounts of air are forced through the fuel bed, thus providing for the absorption by the coal of sufficient oxygen in a short time to destroy the initial caking tendency. Moreover, it is reasonable to suppose that these unusually high temperatures at the same time cause a quite different procedure during destructive distillation than that which obtains with lower heat intensities. That is, these extremely high and unusual temperatures completely decompose both the resinous excretion and the remaining or major part of the volatile-forming matter before the former can set up an appreciable primary structure, and before the carbon of the latter can have time to impregnate any slight primary structure that may have formed.

The absence of coke formation changes completely the character of the fire under the arch and has almost as marked an influence on the rear half of the fuel bed. It is clear that if coke is not formed in the distillation zone the cemented coke lumps cannot be present in the final stages of combustion. The individual pieces of coal retain their identity exactly the same as when Illinois coal is used, with the result that the fuel bed has the soft, incandescent and fluffy appearance which every chain-grate fireman realizes means economy and high rates of burning. The absence of coke formation in the final stages of combusion will be mentioned again.

Description of the New Anti-Caking Stoker

A description of the final apparatus decided on is advisable at this point for the purpose of showing how the high initial temperatures are obtained. Fig. 2 is a view of the grate surface, its general inclination being 20 deg. The arrows indicated by *A* point to narrow chain-grate or conveying elements, which are about 4 in. wide and placed on 7-in. centers. In the intervening 3-in. spaces are placed stationary tuyères indicated by arrows at *B*. At the lower end of the grate surface the tuyères (*B*) terminate in short pivoted bars (*C*) which are made automatically to rise above, then drop below, the surface of the conveyor chains. This action takes place slowely. *E* is a feed grate, adjustable to give various thicknesses of fire exactly as on a chain grate. Partly overhanging the vibrating bars (*C*) is the bridge wall *F*, shown cut away in the center. An ignition arch is shown at *D*. This latter provision conforms to chain-grate practice except that with the greater incline of the grate the arch is farther away from the fire. Fig. 4 shows a cross section side elevation of the stoker and boiler.

Close study of chain-grate practice has revealed much in the art of building up high-ignition temperatures. A great expanse of bridge wall (see *A* in Fig. 4) extending from a point level with the arch down to or nearly down to the fuel bed is known to be of utmost value in directing heat onto the incoming fuel. The steep incline of the stoker in question permits this dimension (*A*) to be greatly extended over that possible with the ordinary chain grate. Moreover, it exposes the fuel bed more directly to the intense heat reflected from the bridge wall and the flame in front of it.

The form of arch also was taken from chain-grate practice, and its design and placement has, of course, contributed its part toward the building up of the high fuel-bed and ignition temperatures that play so important a part in preventing the caking and ultimate coking of the fuel.

Most of the Air Admitted on Bed Below Arch

As to the admission of a generous supply of air (the second requirement for coke prevention), the greatest percentage of the total air supply is furnished under moderate pressure through that part of the fuel bed which is under the arch. This air supply, coupled with the high fuel-bed temperatures obtaining, quite effectively destroys any inherent caking tendency of the fuels thus far tested, and makes it possible to burn Eastern coal with a considerable degree of satisfaction.

In view of the troubles arising from the burning of

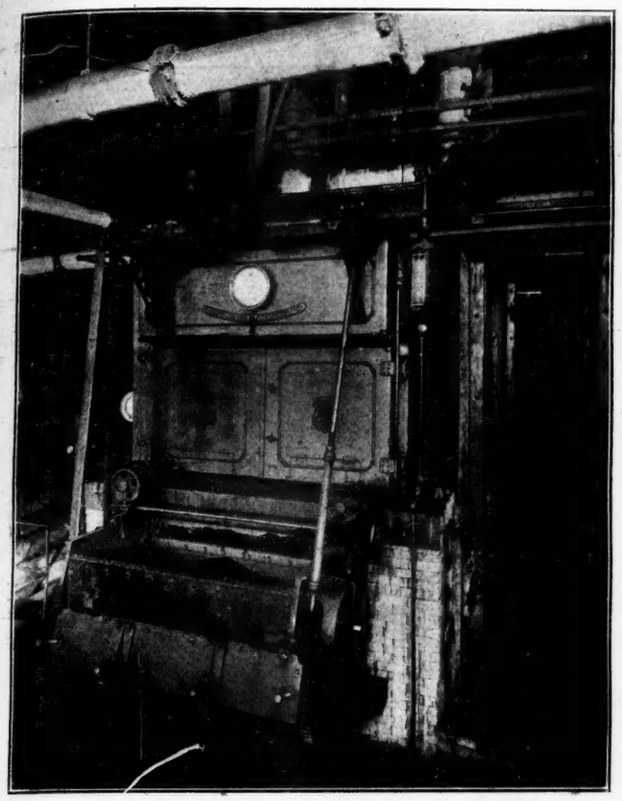


FIG. 1. TEST BOILER AND ANTI-CAKING STOKER

Boiler erected at St. Louis for the purpose of devising a conveyor-feed stoker that would burn successfully coals which cake as soon as they are heated and so admit air to the fuel bed at only a few points, thus causing imperfect ignition and a waste of fuel in the ashpit.

Eastern fuels with stokers that convey the fuel undisturbed into the furnace it is perhaps advisable to give a further description of the stoker in question. Table I presents the entire situation at a glance, and, farther on, each of the items therein is briefly considered.

Rather exhaustive surveys of the gas composition in various parts of the furnace were made frequently during the development work. These surveys showed that the fuel in the zone of destructive distillation yields far greater quantities of combustible particles than does that well-spent portion of the fuel bed near the bridge wall. It follows, then, that air distribution must be regulated to supply large quantities of air to the coal during the early stages of combustion and limited quantities as the fuel nears the place of ash discharge.

Refuse Has Low Percentage of Combustible

It will be generally admitted that in order to burn completely all the fuel with a minimum of air it is of prime importance to provide each particle of combustible just as it rises from the fuel bed with its own quota of oxygen-giving air. The tuyere construction is well suited to such a requirement and lends itself admirably to these experiments. The tuyeres are cast in interchangeable sections containing varing percentages of air openings. This feature permits the making of any desired gradation in air spaces between the two extremes noted in Table II.

It is important at this point to recognize that the wind-box pressure is uniform under the entire grate. This provides high draft intensity and high air-jet velocity for all parts of the fuel bed.

The reduction of the combustible in the refuse to a satisfactory figure was brought about by taking advantage of the four following factors that have a vital influence on the character of the refuse: (1) Ready ignition; (2) a free-burning fuel bed; (3) thickened fuel bed near the discharge end of the stoker; (4) high draft intensity through the nearly-spent fuel.

Reference has already been made to the high ignition temperatures. On the conveyor-feed type of stoker the coal burns from the top downward during the early stages, and from the bottom upward during the remainder of its travel. The higher the ignition temperature, the quicker this reversal is established. An early burning from the bottom upward is recognized even in chain-grate practice, as being most effective in providing for the attainment of a low-combustible content in the refuse.

Air Filters Evenly Through Fuel Bed

In a caked fuel bed of Eastern coal the air breaks through only at the fissures or cracks. Naturally the burning starts only at these fissures, and as it continues holes are formed in the fuel bed. As the holes increase in size the rate of burning decreases, due not only to the cooling effect of large columns of cold air but also to the lessening intensity of draft occasioned by the increase in the effective air openings. This action results in a fuel bed characterized in the final stages by isolated lumps of coke surrounded by patches of bare grate. To prevent exceedingly low carbon dioxide content in the furnace gases the operator must run these bare patches out of the furnace and consequently dump the intervening or accompanying coke lumps into the ashpit.

With coking prevented and with each individual par-

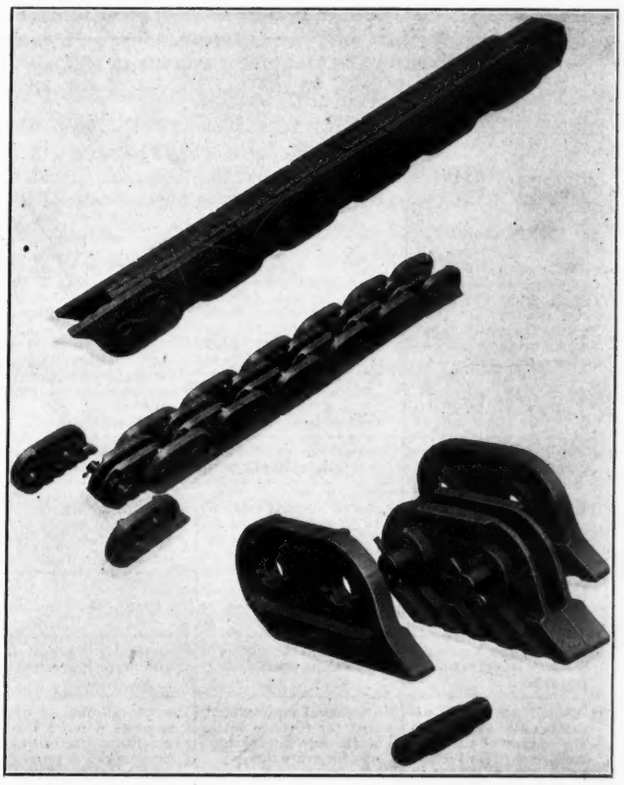


FIG. 2. DETAILS OF THE CONVEYING ELEMENTS

These elements are marked A in Fig. 3. They are about 4 in. wide and are set at 7 in. centers, the intervening spaces being taken up by stationary tuyeres. Most of the air comes through the tuyeres and but little through the conveying mechanism.

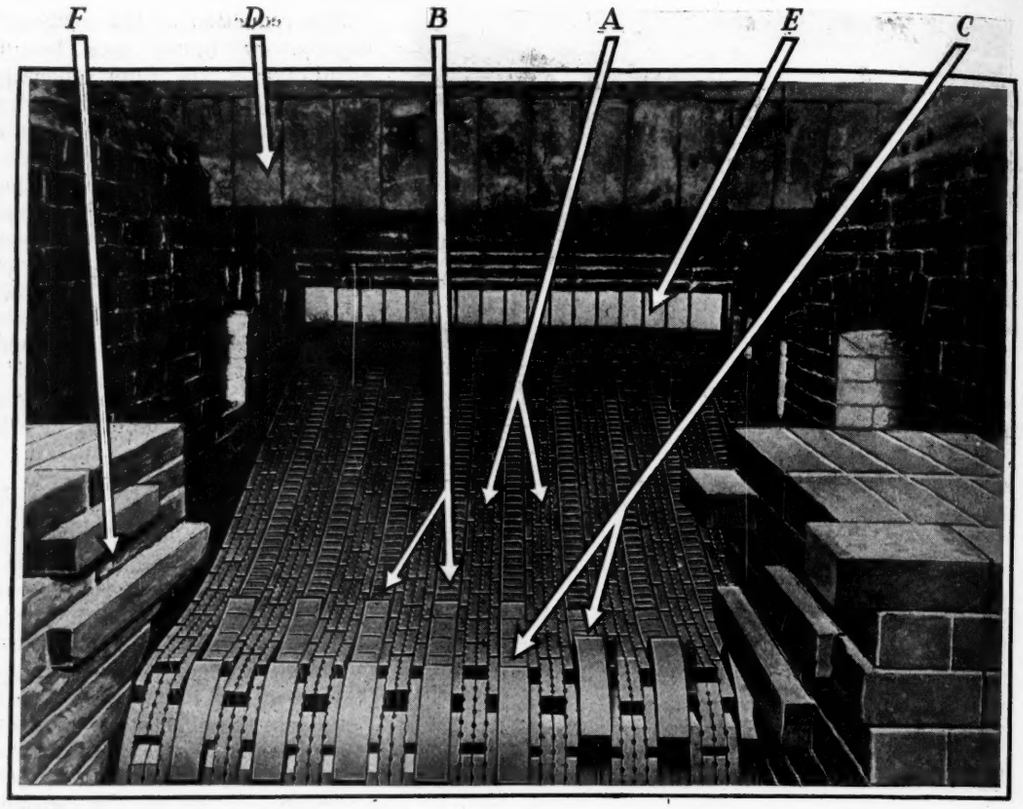


Fig. 3. Grate Surface and Furnace

As seen from the broken bridge wall in the rear, where the grate, in rolling downward, precipitates the ashes into the ashpit. On the right three deadplates are raised so as to hold back the nearly spent coal on the fire. Thus a deep bed is secured and the ash is rendered relatively free of combustible values.

ticle of coal preserving its identity, the air filters upward evenly throughout every part of the fuel bed. Freed from localized burning, the fire now appears soft, intense and hightly luminous.

TABLE I. PRESENT-DAY REQUIREMENTS OF AN AUTOMATIC STOKER COMPARED WITH THE PERFORMANCE OF CHAIN-GRATE AND CONVEYOR-FEED STOKERS, EACH USING EASTERN COALS

Requirements of the Present-Day Stoker	Results Obtained with Eastern Coals	
	With Chain Grates	With Conveyor-Feed Stoker Described
It should completely burn all combustible that arises from the grate, and perform this task under the great handicap of using no more air than is required.	Thin fires spotted with upstanding coke result in excess of air and low carbon dioxide due to the fact that the air supply is not graduated down to a minimum at the rear of the stoker and to influences attending the coking of the fuel bed.	Graduation of air supply and thickening of fire near point of ash discharge and the prevention of coke assure a consistent 10 to 12 per cent carbon dioxide content with positive assurance of an intimate mixture of air with combustible gas.
It should bring about low combustible in the ash.	Combustible in the ash from 30 to 50 per cent.	Combustible in the ash from 16 to 24 per cent.
It should burn coal at high rates of combustion—not only to obtain high capacities but to widen the range of economical rates of burning as well, in order that great flexibility may be assured.	Rates of burning from 25 to 35 lb. of coal per sq. ft. of grate surface per hour.	Rates of burning up to 60 lb. of coal per sq.ft. of grate surface per hour.
It should be as nearly automatic in operation as possible.	Successful in the matter of automatic operation.	Successful in the matter of automatic operation.
It should not entail unreasonable expense in the upkeep of the grate surface or of the furnace brickwork.	No unusual maintenance cost for furnace brickwork, but a very high one for grate links.	Use of mechanical draft imposes a more severe condition for furnace brickwork, requiring a higher grade of refractories, but maintenance of ironwork is not excessive—in fact, may be considered quite satisfactory.

TABLE II. AIR-SPACE DISTRIBUTION ADOPTED FOR CONVEYOR-FEED STOKER

Air Space in Each Element at Feeding End	Per Cent	Air Space in Each Element at Discharge End	Per Cent
Conveying elements	8.0	Conveying elements	8.0
Tuyere elements	22.0	Tuyere elements	2.0
8 per cent of 60 per cent =	4.8	8 per cent of 60 per cent =	4.8
22 per cent of 40 per cent =	8.8	2 per cent of 40 per cent =	0.8
Total air space =	13.6	Total air space =	5.6

Conveyor elements, about 60 per cent of total grate surface.
Tuyere elements, about 40 per cent of total grate surface.

The thickened fuel bed near the discharge end is brought about by the retarding mechanism described. (See Fig. 4.) When elevated the short pivoted bars

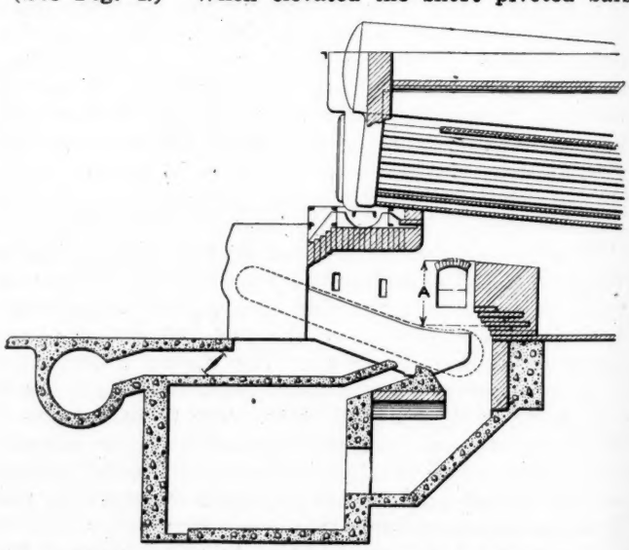


FIG. 4. SECTIONAL ELEVATION OF STOKER

Boiler has 2,500 sq.ft. of heating surface and the stoker 40 sq.ft. of grate surface, a ration of 62½ to 1. Note the elevation (A) of the top of the bridge wall above the grate, a height that is secured by the inclination of the stoker bed.

(*C*) raise the nearly spent fuel above the chains, thus holding it back, and when depressed permit the conveyor elements to carry the ash out of the furnace. The relative duration of these two influences can be controlled by the operator and the fuel bed near the discharge end of the furnace can be held back and thickened to any desired depth.

The high-draft intensity in connection with this thicker fuel bed has already been mentioned under the paragraph on air supply. Full wind-box pressure at this part of the grate forces high-velocity air jets into the thickened bed and hence is particularly advantageous in burning out the remaining particles of combustible.

High Rates of Burning Are Secured

From the foregoing references to mechanical draft it is quite apparent that high rates of burning are attainable with this new type of stoker. The replacement of the typical plastic fuel bed with the free-burning, intensely-active bed obtained with the new equipment materially assists in securing higher rates of coal consumption. A high carbon-dioxide content results quite naturally from (*a*) the proper air distribution described; (*b*) the thicker fuel bed, particularly at the discharge end; (*c*) the higher fuel-bed temperatures that cause increased chemical activity; and (*d*) the impinging jet action on the fuel particles produced by small air spaces and forced draft.

In the matter of automatic operation it is only necessary to recall the basic principle of the conveyor-feed stoker—a positive feed from coal hopper to ashpit. The only action that interferes with this automatic and continuous performance and requires more than a minimum of attention from the operator is the formation of clinker on the side walls. This clinker accumulation is no more serious than with chain grates, but experiments are under way to still further minimize the evil.

Eastern coals require less side-wall slicing than do those from the Middle West, probably because of the lower ash content and the higher fusing point of the ash of the Eastern coals. Such coals likewise have higher heat value and hence greater firing stability than Illinois coals. Because of these two advantages, the firemen of the experimental plant prefer Eastern coals to those from the Central West when firing on the new stoker.

Even Fuel Bed and Open Damper Save Repairs

The thin uneven fuel bed at the discharge end of a chain grate combined with the low ash of Eastern coal exposes the grates to the heat of the furnace. Moreover, with caking coals and chain grates the procedure of partly closing the damper to raise the carbon dioxide content of the gases is too often resorted to, and such a practice invariably results in overheated grate links.

The stoker herein described, by employing a deeper fuel bed and a thick layer of refuse near the bridge wall, effectively protects the grate from the heat of the furnace. In addition, full advantage has been taken of the cooling action of the incoming air. The small air spaces and the employment of mechanical draft produce high air velocities, and this makes for cool links. An excellent idea of the very different character of the new link for Eastern coal and forced draft is obtained from Fig. 3.

High rates of burning and high furnace temperatures of course subject the furnace brickwork to severe service. However, the wind-box pressures are low (less than 2-in. water column), and this combined with the large number of uniformly distributed miniature air openings causes the impinging flame or blow-pipe action to disappear quite near the surface of the fuel bed, thus minimizing to some degree the brickwork deterioration.

The problem of more severe furnace conditions has thus far been met by employing refractories of a higher grade. The side and bridge walls have been made with standard 9-in. shapes and I am advised that the higher refractoriness of the brick used is in part due to its higher percentage of alumina and its low content of fluxes. Regarding the ignition arch, both the process and the mixture are new in stoker work. The material is highly refractory and porous and its performance under the harder usage bids fair to rival the ordinary arch maintenance in chain grates.

Priority Regulation of Coal Distribution Sought in Indiana

FOLLOWING a conference in May of the Indiana Public Service Commission, coal operators and railroad officials, members of the commission have received word from Washington that Indiana will receive some coal cars. Despite this assurance, little hope of immediate relief is expected.

Important developments at the conference were:

Disclosure that coal cars have not been ordered east from Indiana to take care of Lake port shipments, as reported.

Diversion of 39,000 coal cars to the East from Western territory will not materially relieve the situation in Indiana.

The Interstate Commerce Commission will take immediate steps to stop the use of coal cars for other products.

From two-thirds to three-fourths of all commercial coal now produced in Indiana is being commandeered by the railroads for their own use. Utilities and industries get the rest of the decreased production.

The railroad men promised to make every effort to keep utilities and state institutions provided with coal by giving them railroad coal in urgent cases.

The railroad representatives advised the commission to wait a week or two before requesting the Interstate Commerce Commission to re-establish wartime priority regulations and also declared that any attempt on the part of the state to establish priority regulations would prove futile.

During the conference John W. McCardle, vice-chairman of the commission, received a telegram from the Interstate Commerce Commission in reply to the suggestion that the practice of using coal cars for commodities normally shipped in box cars be stopped. The telegram read as follows:

"Action suggested by you concerning alleged misuse of coal cars being taken. Terminal committees at important terminal points are being organized. Among other things they will take action to prevent the misuse of cars."

The point was made by Carl J. Fletcher, secretary of the Knox County Coal Operators' Association, that more than a normal supply of coal is being shipped out of the state. Ordinarily, 6 per cent would represent these foreign shipments, he said, whereas now about 20 per cent, including railroad coal, is going out of the state.

He said this results from the fact that railroads operating outside the state are induced to send cars to Indiana to get coal. Railroad officials declared the operators were making more demands for cars this year than at any previous year at this particular season.

Coal Priority to Help Situation

Following the conference the commission decided that a coal priority order alone would help the situation. On May 26 the following telegram was sent to the Interstate Commerce Commission:

"Conference of representatives of coal carrying roads and representatives of coal operators held Monday. Conference developed three-fourths of coal mined is taken by railroads, leaving one-fourth for all other purposes, which does not meet demands and no opportunity for accumulation on account of winter.

"Indiana conditions large on account of Chicago congestion. It developed in two instances that 90 per cent of coal equipment is out of state. This commission has directed its railroad inspectors to investigate coal cars loaded, destination and all information so as to expedite movement.

"Commission recommends priority order. After railroads, coal should be given to state institutions and public utilities. Coal of state institutions exhausted and several utilities closed. Will co-operate with nearest interstate committee for movement to and from mines."

Erie Road Ordered to Repay Excessive Freight Charged on Coal

ON MAY 3 the Interstate Commerce Commission ruled in favor of Henry E. Meeker, coal dealer, in his complaint against the Erie Railroad. The complainant charged that the road's freight rates on anthracite coal, pea size and smaller, in carloads, from Wayne washery, Clemo, Pa., to Undercliff, N. J., were unreasonable, discriminatory and prejudicial, and asked reparation.

The commission decided that the rates charged on pea coal were unreasonable, but disallowed the claims on sizes smaller than pea. The railroad company was ordered to make reparation, with interest.

Shafts Replace Trace Chains in Kingston Coal Co. Mines

AT THE mines of the Kingston Coal Co., Kingston, Pa., a large number of mules are employed underground. Instead of hitching them to the mine cars by the ordinary trace chain this comapny uses a pair of shafts which make a rigid connection between the mule and the car. The type of shaft thus employed can readily be seen in the accompanying illustration.

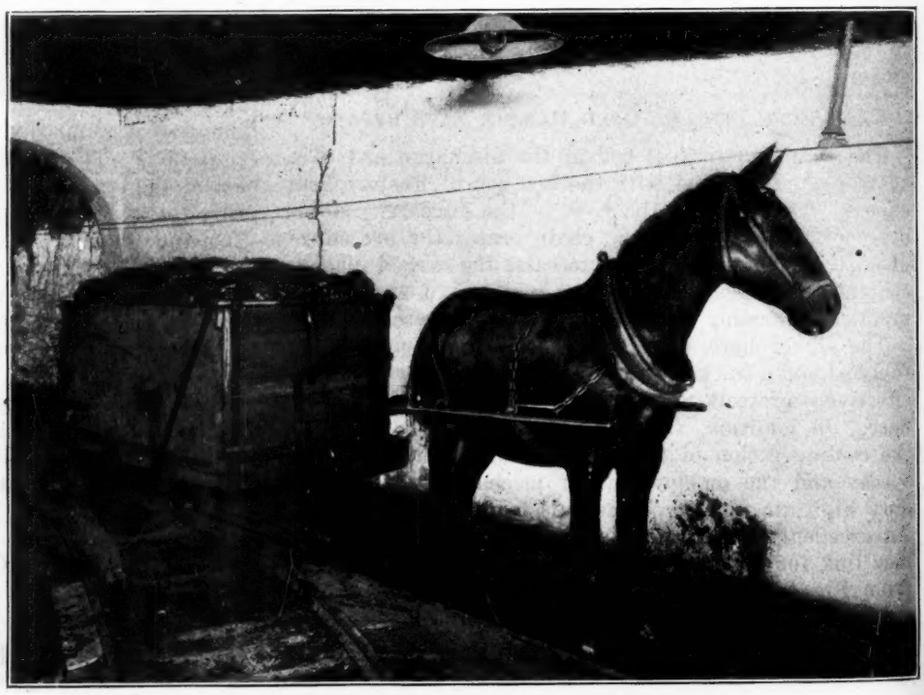
A number of advantages result from the use of shafts instead of the old type of hitching and the Kingston Coal Co. finds shafts best meet the needs of its haulage system. With the former type constant danger existed that the car, when coming down-grade, would run into the mule's heels and either cut his legs or break them if he could not get out of the way quickly enough. There are usually many places in a mine where there is insufficient room for mules to get out of the way of cars.

With shafts it is possible to use a breeching on the mule, and as a result he has a direct control over the speed of a car by holding back in the breeching. Furthermore with this device it is practically impossible for a mine car to run over a mule since there is a fixed distance maintained between the car and the mule because of the rigid shafts. More efficient effort can be exerted on the draw bar as the shaft can be so designed that the pull is horizontal rather than at an incline, as is the case with the old-fashioned type of hitching.

The Nova Scotia Steel & Coal Co., in its operations at Sydney Mines, N. S., employs a somewhat similar device. This latter firm, however, uses ponies instead of mules. The advantage the Canadian company seeks to attain is precisely that sought by the Kingston Coal Co., namely, the interposing of a hitching of fixed length between the animal and the load to which it is hitched.

Mine Mule Working Between a Pair of Shafts

This type of hitching enables the mule to hold back on cars on down-grades. It also gives the animal a better purchase upon the car he draws.



Leadership and Education the Cures for Our Industrial Ills*

Employer of Workingmen Should Make Himself Their Actual Leader—Failure To Do So Makes Possible the Demagogue and Self-Seeker—Misrepresentative Government Due to Neglect of Working Constituency

By Dr. Charles E. Eaton

WHILE you are at work I do not want to talk to you in language that you cannot understand, but I will talk to you today simply as a brother American citizen, and I want to talk about the human element in your business and in all business that you are associated with.

The war was supposed to have been fought to make the world safe for democracy. Now that peace has come we find that we are in greater straits than we were even during the war. We have a democracy, but what we are going to do with it, or what it is going to do with us, remains to be seen. But two things are absolutely fixed—you cannot have a democratic system of life, including government, unless you have an intelligent and moral peace. Public opinion is the last court of appeal, and public opinion will go wrong unless it is created by men who know how to think and who have moral restraints to govern and guide their thinking. For that reason the human element in all our life is the chief element, and that is exactly what we have turned down. We have neglected the one element that in the last analysis is responsible for success in every calling in which we occupy our energies.

Country Ignorant of Industrial Matters

I suppose that no country in the world is more ignorant than our country at the present time of the great industrial processes that men are engaged in who are in business at all. Take, for instance, the railroads. For thirty years before the war every government in this country spent all its spare time hounding the railroads, passing restrictive legislation, confiscating property, and making it practically impossible for the railroads to equip themselves for the future, and that movement was backed by public opinion; otherwise it could not have been put across. When the Government took over the railroads the first thing it did, with one stroke of its pen, was to advocate the repudiation of the legislation of thirty years. In other words, the taking over of the railroads by our Government was a monument to the colossal hypocrisy and stupidity of the American people for a whole generation.

Now the one supreme thing that we are up against in industry is to get production. As to my interest in that, perhaps I had better tell you where I come in on it.

We went into the war as we go into everything—hindside first. We announced that we were going to lick the Germans, three thousand miles across the sea, and we did not have enough ships to carry coal across New York Harbor. We had no development in the shipbuilding industry. In 1917 practically every shipbuilding yard in this country was broke; many went out of business and those that remained were those that owed so much money that the bankers could not afford to bust them.

With that as a start we proceeded to organize the greatest shipbuilding campaign in the history of the civilized world. We got our shipyards and then got our men together, and then the men would not work. So the Government immediately solved the labor problem—a practice which it has followed up to this time—by paying the men three times as much as their work was worth; in other words, where a man used to get $25 for a week's work they found that they could get that much for two days' work and quit four days in the week. So the average work of the shipyards in this country at that time was about two days per man per week, and they did not work desperately hard at that. It got to be such a serious condition that a great meeting was called in New York of ship architects, marine engineers and shipbuilding associations on the different coasts. They asked me to come over and speak.

My theory was that the trouble with these men was one that you could not reach with money. I have spent my life dealing with what is inside of a man rather than what is outside. I have a firm faith in human nature. It is very seldom you can find the man who is normal at all who will not be amenable to reason if he is shown. Sometimes you have to show him in polysyllabic language and sometimes in words of one syllable. Sometimes you have to hit him once or twice gently to make him see the point. But if you go to work and show him reason the ordinary man will respond.

Plain Truth-Telling Gets Results

So I went to this meeting and told these men that if they would put in the shipyards somebody who had no axe to grind, no favors to ask and no interest to defend, but would simply represent Uncle Sam and tell these men the truth, I believed they would respond. Immediately the boss of the situation got up and commandeered me and I had my first and last government job. I reported to him the next morning at nine o'clock and was in for two years.

Before the war was ended I had about seven thousand industrial plants and two hundred shipyards under my care. I never used a single instrument except man-to-man talk—a moral intellectual appeal. I used to stand up and talk to those men in language that would forever put me out of the Church, but I believe they needed it. I was telling the truth.

Now today we confront terrific conditions and I want to place your business against this background which moves and molds all of us. In the first place, we come to a time of frightful nervous distraction as a result of

*From an address by the editor of *Leslie's Weekly* before the third annual convention of the National Coal Association, Atlantic City, May 27, 1920.

war. Everybody is irritated; everybody is critical. Then we have an enormous suspicion everywhere. We have a cynicism that is intolerable.

Your welfare is the welfare of the nation, but nobody believes that. The whole nation looks upon you as a champion assortment of thieves and sharks. The whole nation, on the other hand, looks upon the railroads as another assortment of thieves and sharks. Our chief industry is calling each other thieves and sharks and rogues. The fact is we are not. Nobody is. There are infinitely more honest people in this country than dishonest people, and in your business, as in every other business, you cannot succeed in it unless you are men of character and intelligence. We all know that and that it is only the mountebanks and demagogues that are stirring up strife.

Diversity of Races Complicates Problems

In industry in this country we have a tremendous racial diversity that makes it difficult to allay the suspicion and hatred engendered by false teaching. We have to deal with that. Do you realize that 58 per cent of the workers in our American industry were born in other countries, and in many industries as high as 85 per cent? As high as 85 per cent of increase in this country today is either foreign-born or children of foreign-born parents, and they are segregated into racial groups because of our indifference and stupidity to their presence in our midst in the past generation, and in addition to that they take their fundamental ideas from the countries from which they have come. They take their leadership from their own races across the seas. They have their own leadership and their own thought circles and their own motives and impulses, and many of them are as far removed from America today as if they had never left the land of their birth. You have to deal with them in your business and it complicates your task enormously.

Then there is a vast misunderstanding between the employer and the employee, representing interests and groups, and that has been accentuated and developed by all sorts of teaching and leadership until it has become now a national calamity.

We have got to remember that the human element is more important than the financial or economic. If you do not handle the human element from now on in America, not matter how perfect your management may be, you will not be able to make a success. Now what I have to say to you as the nub of my address today is this: I have no theory to exploit. I do not believe in any method or system that is invariable or will cover all cases, but there are two ideas that I desire to impress upon you—one is leadership and the other is education. Those are the two things that we must have in American industry in all branches if we are to pass out of this age of chaos into a time of success.

Leadership Opportunities Are Neglected

First, leadership. My proposition is that the man who employs labor is a normal leader. That is the next great revolution that is going to come in American industry. The man who employs the workingman is the normal leader of the workingman. Now you, I suppose, in common with all other industrial operators, have neglected that side of your work. How many of you men here are leaders of the men in your employ? I judge very few. You have got to beat the professional deliverer to it and become your own deliverer.

If you do not lead your men someone else will, because they are divided into two classes, the led and the leader. They are both here. You have to accept it as a fact, and if you do not take the responsibility for leading your own men, the same as you handle your own machinery and your own financing, then they will go elsewhere for outside leadership, and when that leader arrives on the scene he can only retain his position by carrying on a campaign to deliver your working people from you, their oppressor, and every advance he makes he makes by depreciating your standing and helping his, as their deliverer, and the moment he gets out of that he gets out of a job.

The average workingman would rather be led by a big boss than by anybody else. The average workingman looks upon his employer a little like a boy looks upon his father, or a political follower looks at his leader, or a church member looks upon his pastor, or a student upon his teacher.

We have got to have leadership. We have got to have leadership not only of you employers in business, but have got to find time some way to come out into the public and help lead the masses of men. We cannot any longer leave the business in the hands of the demagogue and self-seeker and the ignoramus.

Ourselves to Blame for Poor Government

We talk about the low order of our representatives in Washington. If they are a low order of being they are that because they represent another low order of being, namely, you and me; and if we want better men in Washington we cannot ask George to do it; we have got to do it ourselves. But you say, "I could not be elected." No, you could not because you neglect a constituency that normally would elect you, but if you go to it with the same acumen and same honor and same intelligence and same determination with which you go to other tasks, in a short time you will have educated a constituency that will believe in you, and if they believe in you as they believe in other fellows they will elect you. Do not be discouraged, because after you see the kind of men who can get away with it in this country it seems to me that almost anybody could do it if he tried.

Now as to the matter of education. To begin with, the education is in your work with your people, and you as the chief educator. And in what will you educate these men? First, you have got to educate the workingman of today about your business. I do not know what your average employee thinks about that, but I would be willing to wager that he thinks you are just rolling in wealth.

Now you cannot meet a bad idea by calling it names. The only way to get rid of a bad idea is to put a good idea in its place. The only way to drive out a small idea is to put a big idea in its place, and that is a process of education, and of course that process will have to be determined by the individuals themselves in each individual plant in each individual district. These men have to know about your business—what it will cost you, what you are up against. Actually, gentlemen, the trouble is that they do not think of you as anything except a lot of parasites playing golf eight hours a day and trying to recover from your exercise with rest.

That is not an extravagant statement of the case. They think of every big man in business as just drifting along a stream of golden prosperity while the rest of

them are starving and toiling for a mere pittance. You have got to educate the workers of your own industry and take them out from that and educate them upon the larger forces that are flowing around you.

Take two things—and I will just use these two as illustrations—take, for instance, the need of production, which is so appalling that I cannot understand how anybody can sleep over it; and yet the average appeal to a workingman to produce will be met with this answer, and met with it time and time again, "Why should I? Why should I work harder to make more money for the boss?" That is the answer one gets, and the argument with which that is met is usually feeble. Let me ask you if this argument would go across? I have spoken with hundreds of workers with the big boss beside me and the men from the machines around me and I have gotten the same result.

If you could see the production of the world's food and goods placed in a great heap, it is an absolute fact, easy of demonstration, that that complete mass of the food and goods of the world is never more than two years in advance of the world's needs—never in normal times. In spite of all of our machinery and of all our productive capacity, the world has never been more than two years ahead of its consumption in the mass of food and goods created by industry.

Cumulative Causes for Price Increases

Now in the last five years the chief business of the civilized world was to destroy food and goods and men, with the result that the world's stock of food and goods is lower today in proportion to the world's population than it has been in one hundred years. The inflation of the currency has increased prices and profiteering has increased prices, whether done by the employer, the employee, or both. But after you have made due allowance for all these secondary causes of high prices, and consequently the high cost of living, the fact remains things are dear because they are scarce and they never will be cheap again and cannot be cheap until by work and thrift we increase the world's stock of goods to a larger relationship to the needs of the people. That is self-evident.

Now, when you go to the workingman and tell him that he must work and his employer must work and everybody must work and save until we get this heap of food and goods bigger than it is today, and for the reasons which I have named, he may make some response.

We have got in some way to co-ordinate the masses of the city with the production of the farms and get some help out on the farms or we never can bring down the high cost of living, Mr. Gompers to the contrary notwithstanding. He is a great and wise man, I have no doubt, but he says the way to bring down the cost of living is to put the profiteer in jail and increase the wages of the workers. Well, you can go on to some certain extent in those interesting directions, but arithmetic is still on the throne and you cannot get more meat out of an egg than there is in it. It cannot be done, gentlemen, and unless you and I, and your wife and my wife and your children and my children go to work and produce, or produce by abstaining from the consumption of things that are not necessary until we get in a normal condition again, we are going to have to have a condition in this nation in a way worse than anything we had to face during the war.

Something has gone out of the American people. They have quit work. Men tell me in the factories that their production has been reduced 50 per cent as compared with before the war, while wages have increased 200 to 300 per cent in many cases.

The day is coming soon when the man that can work and won't work cannot depend on some labor union to get him a big wage for the two or three days he does work. He will have to work or starve. You cannot bring that to your man by sprinkling him with rosewater or using a powder puff on him. You have got to tell him the truth and you have got to enlist with you the great conservative mass of workingmen in this country. I know the American workingman thoroughly. I worked myself with a pick and shovel for years and can do it again, and would be glad to do it if I had to.

Average Workingman Lacks Courage To Be Free

I believe every man ought to work, and it is God's blessing and not God's curse to mankind to work with his hands. And 90 per cent, certainly 75 per cent, of the average workingmen of this country normally are conservative, sane human beings. The trouble is that they are terrorized. They don't dare to do anything else than go with the crowd. They are just like you and me. We are just the same. We are moral cowards. We have got to have the backbone to say, "I won't be the slave to a labor union. I will starve first. I won't be a slave to a capitalist. I will starve first. I won't be a slave to a despotic government or anyone else. I am going to be free." And the only way to be free is to be able to make your own living at any cost of sweat and sacrifice.

The average high-class foreigner, if you could get him away from the maggots that have been put into his system by the breeders of maggots, you would find, is a fine fellow. He wants his children to have a better chance than he had; he wants a home; wants to be a human being, and if you act as his champion and say, "Yes, that is an American desire, but you will have to pay the American price of hard work and thrift, and if you will I will guide you and help you," you will find that he will follow.

As for the nationalization of the mines, a year ago, when I was in England, that was the great big thing with the laboring people, but they have found since that it was an empty dream; the British Government and the British people said, "No, you shall not nationalize the mines." And they will not do it, nor will they have nationalization of mines in this country, because it cannot be done and at the same time have any coal. We would be infinitely worse off than now, and we have a preference for coal.

State Socialism Now a Dead Issue

Now, you hear an enormous argument about socialism, and with this I am to close. We have all gotten rid of this subject. Hardly anybody in this country but realizes that state socialism is absolutely dead. What is socialism? Socialism was an invention or discovery of a very brilliant German Jew, Karl Marx, eighty years ago. The thing he discovered was that all of the economic ills could be traced to a variety of economic causes. He gathered the whole thing into the realm of materialism and said that if you could get rid of the economic causes you would usher in the millennium. In tracing up the causes he discovered a trinity of evils —private capital, wages for work and corporate investment. He felt that if he could get rid of those three

he would solve the problem. So he looked around for an instrument big enough to uproot this stump, and the only instrument he found big enough to do the job was the political state government, the oldest institution of civilization except the home.

Government Control of Industries a Failure

For sixty years the argument went back and forth and up into the skies as to whether that could be done or not, but they never had a chance to try it out on what you are accustomed to call a commercial scale until the war. As soon as the war started they discovered that it was a struggle between industries and peoples instead of between governments, and in those free countries the governments had to introduce dictatorships and in this country we adopted the fundamental principles of state socialism. Our Government, for instance, took over the entire maritime industry of this country, and is still fooling with it. The Government took over the railroads and operated them and is still operating on them now. The Government took over the telegraph and the telephone, and now look at the poor things!

Our Government fixed prices of commodities, fixed wages of labor, fixed the profit on capital, and then, by a process of economic revolution, it took, through the rates of income tax, immense steam shovels of income and redistributed it among the poor by excessive wages for work that was not done.

What was the result? The result is that two years later we may have had some lingering tendencies to state socialism, but after two years of actual trial, with an absolute dictatorship at Washington, which could make it go if anything could, we are cured of socialism, and the socialists themselves, intelligent and intellectual men like John Spargo, realize that that is the situation. Spargo has recently written a book in which he tells us state-controlled industries are worse than private capital, because they are more expensive and tend to create a formidable bureaucracy.

Russia's Experiences in Government

Russia is supposed to be the kingdom of God on earth in some circles. Russia had an economic revolution set up by Kerensky, a socialist. Kerensky was not equal to the task and out of that revolution there came two very keen but unscrupulous men, Lenine and Trotzky. Lenine is one of the ablest men in the world. He was able to see what we did not see—that state socialism was an absolute failure, that it could not be administered except by a perpetual dictatorship in the government, and no dictatorship could be successful in communities that had had a thousand years of free government, and when he saw that we were going to scrap state socialism as were also Italy, Belgium and France, he decided he would start something else, and he had the courage to take the political state of Russia and tear it up by the roots and scrap it.

Russia is the only great state in the world that has no political state government. He substituted for it the soviet. It begins in the individual factories by a group of the workers. They get together and take the owner by the scruff of his neck and kick him out and they organize an economic organization, and they join with their fellows in other industries into a town soviet, which heads up in a state soviet, which in turn heads up into a national soviet, and the whole thing rounds up in twelve commissariats in Moscow. Russia has been an economic government since Trotzky took charge. It is failing there like it is failing here, because it is contrary to the laws of human nature. After a thousand years of sacrifice, of experiment and struggle, in which we tried to learn how to govern ourselves, you cannot expect the English-speaking world, at least, to turn away from the results of those thousand years of effort and take some wild and theoretic scheme which destroys the very foundation of things, and so I say socialism is a dead one as a practical proposition. Of course we will hear from it, but it will not work and the strongest men in that movement know that it cannot work.

These are stormy times, and are going to be stormy, but if we will make our economic institutions at the same time agencies of education and educate by fearless and able thinking and get to the bottom of every proposition that is haunting the minds of the masses of men, workingmen will not go back to their situation in the world before the war. I do not want to see them go back. I want to see a wider distribution of wealth. I want to see every home in the land where a man works and the family works, with musical instruments and education for the children and a good nurse if they are sick, and a little laid by for a rainy day. The country that has that kind of distribution of wealth is going to weather the storm, and those countries that fail in that respect must go down.

Education Needed in Place of Theorizing

But you will not reach that point unless people stop their theorizing and nonsense and rebellion and go to work, and they will not go to work until they are educated either by a touch of starvation or educated by your leadership, and so, gentlemen, gird yourself for the fight; gird yourselves for a great fight. Do not be afraid. You can put your money on this country without fear of losing it because we will not lose in the long run, but we have to have men like you, good citizens like you, as educators to help the rest of us, even though you lose money in the undertaking.

It will be a good thing if you do not lose yourselves and the country and the consciousness that you are free men regardless of what comes against you, and therefore go out to your task and gird yourselves for the struggle as brave and free Americans. Believe in yourselves and in our resources, our resources of brain and character; believe in your God and make it a sacrifice and worship; believe in your fellow man, in his reason and honor; believe in your country, in its greatness and glory and strike what you think is wrong a fair and square blow in the front and stand up for what you think is right. Although it will be a stormy day, at the sunset there will be a time of peace.

Seek Revocation of P. R. R. Prepayment Requirement on Coal

THE Tidewater Coal Exchange, Inc., and wholesale coal trade associations are seeking revocation of the requirement of the Pennsylvania R. R. for prepayment of freight on coal shipped to tidewater. This is the only road requiring payment of freight in advance, other tidewater carrying roads collecting from the dumper. As cars reaching tidewater lose their identity, being handled on a tonnage basis, it results in bills being rendered on cars forwarded for other shippers, causing in many cases over-payments by shippers.

Rise in Coal Prices Is Attributed to Government Regulation*

Federal Interference with the Industry, This Authority Asserts, Brought About Such Uncertainty of Supply That Uniformly High Prices Were Inevitable — Cost Figures Gathered to Justify Extravagant Prices, He Thinks, Rather Than to Reveal Where Cost Could Be Cut

By George H. Cushing

THE U. S. Geological Survey has no record of any measurable production of coal in the United States prior to 1821, although some coal was produced in 1807 or even earlier. In 1821 our output was less than 1,500 tons. In the ninety-three years between 1821 and 1914 the annual increase in production was 5,630,000 tons. The annual production did not equal this annual increase until 1848.

For the fifty years ending in 1914 the annual increase in production was 9,799,507 tons. The annual production did not equal the annual rate of increase for this fifty years until 1852. For the twenty-five years ending in 1919 the annual rate of increase was 18,700,000 tons. The total production of the nation did not equal this annual rate of increase until 1863.

Surplus of Supply Made Profits Unusual

There is no record of consumption to match these production figures. The folklore of the trade is that from 1807 until the fall of 1916 the current production of coal was steadily in excess of current consumption. That is, production was almost invariably in anticipation of need rather than being timed nicely to meet demand. In consequence there was as a rule a comfortable visible supply of coal above ground. Indeed, this visible supply has as a rule been so large that only in rare instances did the sales prices on coal rise to the level where more than a third of the producing companies were making money. The only recorded period when prices were generally profitable for as much as nine months in any one year was during and immediately following the anthracite strike of 1902.

Prior to 1916 it was the rule that high prices for a few months brought such a quick increase in production that the prices dropped below even the normal low level. Hence the profits of one abnormal period were turned into losses in the depression which immediately followed the flooding of the market.

A practice persisted in through practically a century may properly be said to constitute the natural routine of the industry, so we may say that the normal state of coal is to have abundant production and prices which fluctuate freely, leaving an assured margin only to the few.

Coal prices rose in the fall of 1916, but have not declined since. They have been uniformly profitable for nearly four years. There was no opportunity to determine whether the rise in price which came in 1916 would be followed by the customary depression due to overproduction, because at the end of nine months the Government undertook to regulate coal. Therefore an artificial force was introduced into both production and distribution, serving to freeze prices at the high level they had reached. These four years therefore stand alone in a hundred years of coal history. It is the only period when the coal business was uniformly profitable without bringing quickly a great overproduction of coal.

Inefficient Railway Control Limited Supply

The only possible deduction to be drawn from these facts is that detailed governmental interference with the coal industry reverses its normal practice by bringing a period of uncertain supply and results in a sustained period during which uniformly profitable prices apply.

In passing it is significant that this abnormal period in coal was co-extensive with the period of detailed control of transportation by the same forces. It is undoubtedly true that the failure of coal to express itself naturally by overproduction in response to high prices was due to the failure of the Government-controlled railways to carry the easily possible output of the mines.

There never has been a dependable record of coal prices. There is none now. There are, however, two outstanding facts about coal prices:

First, American coal prices fix the cost of power to the American manufacturer. The mine-mouth price of coal in Great Britain fixes the cost of power for the rest of the world. The price of English coal has, as a rule, been two and one-half times the price of the American coal. That relationship to all practical purposes still exists. Therefore, the cost of power in the United States has been and is the low cost of power for the world. This is one big reason for the commercial supremacy of the United States.

Second, the increased cost of coal at the mine mouth is less on a percentage basis than the increased cost at the source of manufactured articles. Therefore the relation of cost of power to the value of manufactured product has not increased. Rather it has decreased. Thus the American manufacturer is not at a disadvantage in the world markets on account of his cost of power. Instead he maintains and increases his advantage.

Profits Estimated on Invested Capital

This means that the American coal price in relation to coal prices elsewhere is and has been subnormal rather than abnormal. The same is true of the relation of coal prices to the cost of manufactured articles. If, however, you take the position that the cost of other things is abnormal, then the price of coal is abnormal. The fact is that when the coal man goes into the open market to buy other things with his ton of coal he gets less for his coal than he did in the pre-war period.

Nevertheless it is commonly said that the profits of

*An address by the managing director of the American Wholesale Coal Association before the Kentucky Mining Institute at Lexington, Ky., June 4, 1920.

the coal men have increased on a percentage basis. That is true only because the percentage is figured on the invested capital, rather than on the working capital. One has stood still; the other has increased. If the percentage were figured on the working capital, it would be found that this percentage had decreased rather than increased. Therefore, the profit of the coal company seems to have increased—but has not—merely because the capital of the company has not been expanded commensurately with the amount of money invested in the business.

No conscious effort was made prior to 1914 to collect statistics on coal consumption. Naturally there was no exact information as to the uses to which coal was put. The folklore of the trade was that prior to 1910—with the exception of the bituminous coal from Pennsylvania—the output went 60 per cent to the domestic trade and 40 per cent to the steam trade. There was a guess figure that 25 per cent of the coal went to the railroads. If this division was even approximately accurate it indicated that only 15 per cent of the coal in those days went to industry.

I mention these figures not because they are accurate but because they express what was then the belief of the industry. About 1910 there was a revision of figures. I heard it estimated that the steam trade was taking more of the coal and that—outside the bituminous district of Pennsylvania—it was moving 50 per cent to domestic trade and 50 per cent to the steam trade. This would indicate that industry was taking 25 per cent instead of the 15 per cent previously accredited to it.

Profits from Prices for Domestic Coal

These percentages had, naturally, their influence upon the price policy. So long as there was considered to be even an approximately equal division as between the three major users—the householders, the railroads and industry—it was considered possible that steam coal could be sold for cost or less and the profits, if any, of the industry could be made up by prices charged for domestic coal.

It was in those days common for coal men to stress the importance of car supply and cold weather upon the profitableness of the industry. Thus, we often heard at the beginning of the fall the remark: "From now on it is a weather market. If we have blizzards, we will have good prices and make money. If we have an open winter, there will be no chance to make money."

Such a conception of the market could rest only on the theory that the only profitable size in coal was the domestic size and that the only hope of making money was in the price charged to the householder through the retail dealer.

Beginning with September, 1915, the coal man began to feel that some new but rather mysterious force had entered the market. Bituminous coal prices began to rise in the East and then in the West. It was known that the East did not use bituminous coal for domestic purposes. So it was the steam demand that was boosting prices. By degrees, but slowly, the trade came to understand that coal for industry was assuming a dominant position.

For three years, however, the trade did not appreciate the tremendous change which had taken place. It had attributed this leadership of industrial coal to the war and believed it to be temporary. This belief persisted even during a greater portion of 1919. If, however, the trade had been closely and carefully analytical it would have been prepared for the assumption of that permanent leadership by the so-called steam sizes which has now come.

Industrial Demand Grows Important

In fact, the trade had been placarded for years with many signs pointing to this change. For example, I remember when slack coal or screenings sold on contract for 30c. and 35c. a ton. We can all remember when, in off seasons, this same coal sold at 10c. or 15c. a ton. We saw, however, that by 1914 the average or contract price on "fine" coal was 80c. to a dollar a ton. Even in 1914 we were not prepared to accept the real truth, namely, that the industrial demand was growing in importance. Instead, in rummaging about for an explanation we found it to our satisfaction in the fact that industrial plants were installing automatic stokers and were therefore switching their demand from run of mine or steam lump to the smaller sizes of coal. We saw only a shift in demand when it was, in fact, a growth in demand.

It was not until the fall of 1919 that the coal man really realized the truth, namely, that the big increase in demand for the last twenty years has been for coal in industry. It amazed all of us to find that a reasonably accurate estimate of demand for bituminous coal in 1920 would result in a division of the total productions about as follows: Household coal, 65,000,000 tons; railroad coal, 135,000,000 tons; industrial coal, 325,000,000 tons.

In other words, we were not prepared to find that the old or imagined equal distribution among the principal users had disappeared, never to return; that the railroads were using twice as much bituminous coal as the householders, and that the industrial demand is taking nearly two and one-half times as much as the railroads and one and two-third times as much as the railroads and householders combined.

The growth of the demand for coal for industry has eclipsed the demand for railroad coal and domestic coal. Domestic coal has so shrunk in importance that instead of taking 30 to 50 per cent of the output of mines it is now taking only 12 per cent. Railroad demand has so shrunk in importance that it is now taking only 25 per cent. Coal for industry has grown from 15 per cent to the point where it takes 62½ per cent.

That automatically reverses our price policy. It is impossible to sell 88 per cent of the coal at cost or less and make all the profit on 12 per cent of the coal. It is impossible even to lose money on 62½ per cent of the coal and make up the profit on the 37½ per cent of all the coal which goes to railroads and householders.

Railroads Were Once Overequipped

Briefly industrial coal is going to occupy the dominant position in production and must be the dominant influence on prices. The profits, if any, in the industry must be figured on the price of the steam coal—as it has been for years in Pennsylvania—instead of on the railroad and household coal. We have an entirely new basis for coal prices. The monitor of the trade is the industrial demand. The others are side issues—by-products.

Prior to 1910 there was still left in the railroads a semblance of the competitive spirit. The railroads knew that to make money they must carry freight. To

carry freight, they must have transportation facilities. Therefore, they overequipped rather than underequipped themselves. In those days the matter of getting transportation was not serious. On this account there was always plenty of coal at the market.

Because there was plenty of coal the price of coal was low and the trading margin on it was narrow. When the margin was narrow, a difference of a few cents in the freight rate determined the sale. Therefore, in those days the coal man was not interested in transportation problems of the railroads, but he was deeply interested in traffic problems. He needed to have rates nicely adjusted so that he would never be out of line with his competitor even a cent a ton. He knew that to be out of line by 3c. a ton meant to be out of that market.

Future of Coal Business Uncertain

Today the competitive spirit of the railroads is gone. The railroads are stall-fed. If they do not get revenue from their own exertion the Government gives it to them. They do not earn money by carrying freight, necessarily. They are guaranteed that there will be a return on their capital regardless of any effort on their part. They have become a ward of the nation; a public charge; an incipient pauper; beggars before the appropriations committee of Congress. As a corollary they have less than enough equipment.

This is having a direct effect upon the point of view of the coal man. He is no longer interested much in the matter of freight rates. He has consented to one increase after another. When a new proposition comes to give a new increase in rates he gives it his instant approval. And he is not seriously disturbed now by a differential against him of 10c. or 15c. or even 20c. a ton. He knows that the distant competitor may have the advantage in rates, but that he can't get the cars. In a word, the coal man has lost his interest in traffic matters. He has gained an interest in transportation matters. He is no longer talking rates; he is talking cars, and engines, and service.

I have sketched the coal history. I have nodded to a few of the big problems of yesterday and today. What does this mean about tomorrow? I wish I knew. I wish I could put my finger as unerringly upon even the near future of the coal industry as it is possible to do upon what has happened and is happening. However, it is possible to speak only in generalities. Rather than giving the reasons for these conclusions I shall have to be content with merely the conclusions themselves:

1. The Government has been led to believe in the wisdom of the commission form of government for the railroads. It believes in rate control to assure morality of railroad practices. Having undertaken rate control, it must try to control the cost of operation and income. It is wedded to that idea. It has made the legislative experiment. It is not going to abandon it, short of a revolution.

Cutting Down Commerce to Fit Railroads

2. The Government recognizes that the railroads are no longer adequate. Despairing of building more roads and of improving the present systems under present conditions, it is setting out studiously to build auxiliary transportation systems by reviving abandoned waterways and by pioneering in ordinary road building that we may encourage auto-truck haulage.

3. The Government recognizes that these expedients are of doubtful value. Hence we are approaching a cataclysm arising from the fact that the stall-fed railroads cannot carry the commerce of the nation and we will have nothing to take their place. Therefore there is a studied effort today to put business under regulation to the end that the volume of commerce may be whittled down to the size of the carriers. One of the first steps in this interesting program is the return of detailed regulation of coal as outlined in the proposals of Senator Frelinghuysen.

It is the definite understanding in Washington that this is but the overture to the larger program, which is to put all business under similar control. I do not speak in any ill-advised fashion. I know what I am talking about. I have put this proposition squarely and plainly before those who are advocating control of coal. They admit frankly that the program which I outline is the one upon which they have entered deliberately. With unblushing audacity these advocates of governmental control admit that their proposal is for the commission form of Government for everything in order to protect the commission form of government upon the carriers.

Coal Men Advised to Learn Self-Government

4. The coal trade is going to be policed. Somehow the information which is demanded of coal is going to be reduced to a definite record. Somehow the distribution of coal is going to be adjusted to the new situation in which the carriers find themselves. So the coal trade must be policed. If coal men can do the job themselves they may avoid for a little while the exercise of that police power by the nation. The length of time elapsing between now and another Fuel Administrator will be directly proportional to the capacity of the coal man for self-government.

5. Washington believes that the coal trade is tricky. That is, it gathers production information for the purpose of deceiving students of coal rather than for the purpose of reforming itself. It gathers figures on the cost of production to justify extravagant prices rather than to serve as an index as to where to cut the cost of production. It gathers information about prices for the sole purpose of controlling them on a high level instead of using this information to reduce the coal trade to sanity. And, in the Washington opinion, it is adopting the labor union practice of trying to increase the profits of the efficient by justifying a profit to the inefficient.

If it is to evade for long detailed exercise of the police powers of the nation, it must, in my opinion, reverse its practices in all these particulars. In a word, seeing the situation by which we are faced, the coal trade must "come clean" or stand by to see the slate, so far as it is concerned, wiped clean of any coal influence upon the coal industry.

United States Said to Have 7,000 Years' Coal Supply

SUFFICIENT coal supplies to last about seven thousand years are still unmined in the United States, S. M. Darling, of the U. S. Bureau of Mines, told the twelfth annual convention of the International Railway Fuel Association in Chicago, May 25.

He estimated the supply of minable coal at 3,553,637,100,000 tons. Last year's consumption, he said, was 530,000,000 tons.

Discussion by Readers

Edited by
James T. Beard

Contract System of Mining Coal

REPLYING to the question of "Mine Superintendent," in *Coal Age*, May 6, p. 959, concerning the contract system of mining coal in Pennsylvania, I thought that probably some information from another field would not be amiss and might prove of value.

In many parts of Kentucky, the operator gives an entry or section of pillars to some capable experienced miner, at a fixed price for delivering the coal on the sidetrack, or in some cases to the tipple. In practically all cases, the operator supplies everything just as though he had charge of the work himself.

The contractor hires and plans the work for his men, and turns in their time just as though he was a boss, instead of a contractor. The only advantage, in a system of this kind, in these parts, is that the hope that more pep will be put into the production of coal in that section when a single individual is given charge, who is striving to make extra money through his own initiative, which is not usually the case in the average section boss.

The contractor puts into the work the necessary personal flavor that is necessary to get a good working spirit started among his men, who, as a rule, feel that to fail in their work is a personal blow to a man who is a friend.

The principal drawback to this manner of working is that an unscrupulous contractor will, in a short time, get a section of the mine in poor condition. So to overcome this, most operators hire a foreman, who holds the contractor closely to good mining practices and the articles of his contract; and sees that the mining law is strictly complied with, in general.

Pikeville, Ky. G. E. DAUGHERTY.

An Amusing Incident in the Charging of Storage-Battery Locomotives

RECHARGING storage-battery locomotives, in mining practice, is an important subject. The reference made to it in the inquiry answered in *Coal Age*, Apr. 29, p. 874, recalls to my mind a curious experience that I had with the first storage-battery locomotive I designed for the Jeffrey Manufacturing Co.

The locomotive was designed in 1899 and built for a large operation in Pocahontas, W. Va. The machine was a five- or six-ton, gathering locomotive, the battery being charged from the trolley wire while hauling the trips out and in, on the main haulage entry. The battery was a Willard type. The machine being the first of its kind was regarded as an experiment and we were watching it with great interest, keeping a trouble man constantly on the ground, though he actually knew very little about storage batteries, being one of our own men.

The machine started out well enough and reports were satisfactory, until one day we got a telegram informing us that the battery had exploded. I at once got in touch with Mr. Willard, who expressed his desire to go down to the mine with me for the purpose of making a thorough examination, as this was a new experience to him.

Upon our arrival at the mine we were told that the battery had "blownup" while pulling the trip on the main entry, charging in the regular way off the trolley wire. The "blowup" had so scared the operator that he deserted the locomotive, taking to his heels for dear life, and sprinted for daylight.

In his excitement, the man overlooked turning the controller handle to the "off" position, with the result that he had a worthy competitor in his race to safety. He must have gone some, because he won the race, although with a very small margin. When that marathon runner got to the mouth of the mine and, all out of wind, rolled off to one side of the track, safe and happy, the locomotive came rolling along as though nothing had happened, wondering in its own way what possessed the operator to cause him to run away from a friend in distress.

AMUSEMENT AT THE MOTORMAN'S EXPENSE

We all had a good laugh over the incident, as it struck us all as being very funny. But the sprinter could not see the funny part, and expressed himself freely about electric locomotives in general and this battery experiment in particular, in terms that were intended to put an effective stop to the merriment at his expense.

After the hilarity had worked off a bit, we examined the innocent cause of this prank played on the indignant operator. We found six or seven of the battery jars cracked and the acid flooding the wooden box that housed the 88 or 90 cells. The box being lead-lined no damage had been done to the locomotive. The box had a heavy wood cover over the cells to protect them from curious fingers and falling slate.

The cover had mysteriously disappeared and no one had given it a thought, until, on our asking for it, someone came forth with the information that a wood cover of some kind had been unloaded from one of the mine cars at the tipple on the day of the "blowup." We looked for it, later, and sure enough that was the battery cover all right.

EXPLOSION EXPLAINED AS BEING CAUSED BY THE IGNITION OF HYDROGEN IN THE BATTERY BOX

Mr. Willard soon explained the cause of this "blowup" by saying that, the battery, being charged from the trolley wire at a very fluctuating voltage, must have generated more gas than the openings under the battery-box cover were capable of removing. A probable short-circuit, due to condensation on top of the cells, must have caused a spark and the explosion of the confined hydrogen resulted, blowing the cover off the box, which struck the roof. The sudden stop in its flight added to

the noise of the explosion and it is no wonder that the combination put our friend to flight.

The result of this experience convinced us that charging from the trolley wire, while the locomotive was running, was not desirable; but it was some years later before motor-generator or even resistance-charging sets came into use. As a matter of fact, the experience became noised about and the battery locomotive got a set-back in the opinion of many mine managers and engineers.

Battery Compartment Must Be Well Ventilated

The experience also showed that there should be plenty of ventilation over the cells, when the battery was being recharged. To avoid the necessity of lifting off the cover every time this was done, I devised a plan of exhausting the gas generated, by installing a small fan driven by a motor. I also provided a rubber-sheet acid-catcher over all the cells, in such a manner that only the filler and the gas-escape openings projected above the sheet, while all electrical connections were below the sheet and out of danger. These improvements were later patented, in my name, and assigned to the Jeffrey company. Whether the scheme ever came into actual use or not, I am unable to say, since I was no longer connected with locomotive building when the storage battery finally became popular.

I thought this bit of history would be of interest as well as serving to answer, in a way, the question asked in the inquiry, in regard to whether an explosion had ever occurred in recharging batteries in the mine.

Alex. Palmros,
Consulting Engineer.

Syracuse, N. Y.

Concrete Example of Labor Turnover

HAVING read with deep interest the statistics compiled by Mr. Crews, for the Bituminous Coal Commission, and published in *Coal Age*, Feb. 12, p. 316, I beg to submit the following brief regarding the earnings of men in the mining of coal.

We hear much, in these days, about the increased cost of living; rising standards of living; decreased production, per man, per hour; etc. More and more, the daily papers and trade journals publish articles with concrete illustrations couched in percentage figures, rates and ratios. I often think how meaningless these articles must be to those who do not understand the intricacies of higher mathematics; and what an opportunity the writer of such an article has to phrase his statement with an inflection that entirely misconstrues the facts indicated by the figures.

Much of the Propoganda in the Daily Press Is Misinterpreted by the Public

In these days of scientific advertising and salesmanship, the reader is inclined to mistrust these articles as being creatures of the brain, employed to bolster up propaganda for one side or the other. How can we discern between the real and those distorted facts intended to misguide some particular group or class of readers.

I refer more particularly, now, to the many articles that were written during and since the recent strike of the bituminous coal miners. Articles written by both sides, supposedly representing the miners, or the operators, quoted all sorts of figures and percentages, apparently based on facts but given an inflection meant to turn the reader from the figures to the conclusion reached by the writer.

Mere propaganda cannot be trusted. The only figures that one can really trust are those compiled by himself, where all the influencing factors are thoroughly known and understood. Fortunately, I have since found time to do this and herewith present the results and my interpretations and conclusions to the readers of *Coal Age*. The work, to be comprehensive, is so tremendous a task that a small operation, employing an average daily working force of about a hundred men, was chosen.

Analysis of a Year's Payroll

To my surprise, I discovered that to maintain a force of 100 men, daily, no less than 598 names appeared on the payroll, during the course of the year 1919; and 239 of these worked less than a month while only 56 of them worked the entire twelve months. Of these 56, all but four made over $1,000. The average was $1,524.87, for the year, which showed a monthly rate of $127.07. The four who earned less than $1,000 worked only two or three days during several months, but their names appeared on every payroll throughout the year.

The following table shows how irregularly the men worked during the year and the earnings of each group:

Period Worked	Number of Men	Total Amount Earned	Amount Earned per Man	Per Man, per Month
Less than one month	239	$ 9,263.01	$ 38.76	$ 38.76
From 1 to 2 months	96	12,374.66	128.90	64.45
2 to 3 months	48	11,472.88	239.02	79.67
3 to 4 months	30	10,491.07	349.70	87.43
4 to 5 months	20	9,734.99	486.75	97.35
5 to 6 months	21	11,638.31	554.20	92.36
6 to 7 months	19	13,855.97	729.26	104.18
7 to 8 months	19	13,694.92	720.78	90.10
8 to 9 months	14	12,152.14	868.01	96.45
9 to 10 months	20	23,821.38	1,191.07	119.11
10 to 11 months	16	21,001.24	1,312.58	119.33
11 to 12 months	56	85,392.57	1,524.87	127.07
Totals	598	$234,893.14		

Following is a table showing the earnings of the 239 men who each worked less than one month. It will be observed that one of these men earned, in that time, $320.05. The table is of interest by way of comparison.

Number of Men:	Amount Earned per Man
56 earned	Less than $10.00
48 earned	$10.00 to 20.00
33 earned	20.00 to 30.00
22 earned	30.00 to 40.00
17 earned	40.00 to 50.00
15 earned	50.00 to 60.00
12 earned	60.00 to 70.00
8 earned	70.00 to 80.00
5 earned	80.00 to 90.00
4 earned	90.00 to 100.00
13 earned	100.00 to 150.00
5 earned	150.00 to 200.00
1 earned	320.05
239 men	Total earnings, $9,263.01

Truly the question of labor turnover is one of vital interest to every operator, when out of 598 men employed only 56 remain at the end of a year. This was at an operation located just outside of a good-sized city. Of the 56 steady employees, two-thirds were married men.

During the same year, 85 men made a taxable income; two cutters made $2,925.92 and $2,896.62, respectively. The mine being nonunion was in operation all of November and December when so many coal mines were idle by reason of the strike.

It is one thing to compile figures but much more important to be able to read them intelligently. One might charge that the men who work in this mine average only $38.76 a month, and ask if that is a just

wage. The answer would be, emphatically, No! It is true that 239 men, who worked there less than one month, averaged that low rate; but that includes all the men who worked from one hour to thirty days, many of them earning less than $10, and quit.

Some might divide the total payroll ($234,893.14) by the number of men employed (598) and say that the average monthly earnings for these men was $32.73. True; but what a gross misconception of the truth to interpret figures in that way. For an average is valuable only when the figures approach similarity. An average is of no account when the variation is large, as in this case where the total includes men working anywhere from one hour to one year.

It is easily seen how readily one falls into difficulties in interpreting statistics; and statistics are worse than worthless if wrongly interpreted. In determining the *true* monthly wage of these men, a *weighted* average must be used and the total accrued from month to month. Thus, by re-reading the figures, we find that:

Number of Men	Months Worked	Total Amount Earned	Average per Man, per Month
56	12	$ 85,392.57	$127.07
72	11	106,393.81	125.49
92	10	130,215.19	124.25
106	9	142,367.33	121.26
125	8	156,062.25	117.69
144	7	169,918.22	116.39
165	6	181,556.55	114.55
185	5	191,291.52	113.53
215	4	201,782.59	111.79
263	3	213,255.47	109.42
359	2	225,630.13	105.38
598	1	234,893.14	98.68

Thus we see that the true average monthly pay increases directly with the length of time the man worked; and that the steady miner earns a fair living wage, and one that compares favorably with the wages paid men in other occupations. These figures would indicate that the miners do not need an increase of the wage scale nearly as much as they need steadier work. The reduction of labor turnover would be a large factor in increasing their average pay and in decreasing costs to the operator. Anything which would tend toward this end should be welcomed by both the labor chiefs and the operators.

It is a common saying that figures do not lie, and they don't. They tell the truth, until some human brain uses them as illustrations to prove his theory, which is generally predetermined. If one formulates statistics with a foregone conclusion as to what they will show, any figures indicating the contrary will not change his preconceived notions. While figures do not lie, so many people lie about figures that it behooves us to take them all with a "grain of salt" and make our own interpretation, instead of allowing someone employed for the purpose to do the interpreting for us.

Philadelphia, Pa. WILLIAM RUSSELL RORER.

Car Supply the Determining Price-Factor

COAL prices may be rightly gaged, today, by the car supply available at the mines; and there is little hope of seeing lower prices until that situation is remedied. The quickest and most effective way to stop the so-called "profiteering" in coal is to insure 100 per cent of car supply, at all mines. Rabid-price investigations and legislative regulations accomplish little and are mostly misleading.

Few persons, outside of the coal business, understand why price of coal fluctuates so widely, from week to week; the range even reaching two dollars a ton; but a study of the mine reports will furnish the answer. Since the month of October, the car supply at the mines has varied, weekly, from 20 to 60 per cent, and most of the time has shown a very low percentage of the normal requirement.

As a result of this condition, the cost of producing coal one week is, perhaps, double what the cost will be the week following. The reason is that a mine is something that cannot be locked up and again opened on a day's notice. There are certain costs that continue even though not a pound of coal is mined; and these costs cannot be overlooked when figuring the price of coal.

INCREASED EFFICIENCY COUNTS FOR LITTLE

It is indeed a problem how to pass on to the consuming public the results obtained by the increased efficiency in the mining of coal, today, when these results are more than counteracted by the inefficiency in railroad management. Since the destiny of the coal-mining industry is so closely linked with that of railroading, on which its success depends, the fact must be recognized that the troubles besetting the latter react most seriously on the former.

Coal operators are not only subject to their own industrial troubles; but are likewise affected by those of another and what is generally supposed to be an entirely separate industry. The handicap that such a condition imposes on the coal industry any man of business can readily understand, inasmuch as no intelligent or efficient plans for the production of coal can be formulated or carried out on a car-supply basis that fluctuates as it does today, and has been doing since October.

Perhaps, if the public were more familiar with this important problem of car supply, it would better understand why coal mining is regarded as a hazardous industry, not alone for the miners, but for the mine owners and operators as well. Furthermore, what may seem like "profiteering" is, in reality, nothing but the result of a condition over which operators have no control; namely, car supply. N. H. SEABURG.

Boston, Mass.

Co-operative Merchandising

REGARDING the question of the high cost of living having much to do with the social unrest prevailing in the country, I do not think there is a dissenting voice. But, what does not seem to be so generally known, is the fact, easy of verification, that, high as is the cost of living in cities and districts bordering on the highways of trade, it is still higher in the more or less remote regions where coal mining is generally done.

The time is past and gone when the company store, unhampered by competition, charges as high prices as customers will stand. Even where no competing store is to be found within walking distance of a mining camp or village, the coal operator no longer thinks it good policy to get back, through the store, the largest possible proportion of the men's earnings.

It is true, of course, that where competition is lacking, the prices asked at the company store are much higher than they would be otherwise. But, no matter what competition there may be, the miner must always pay more for his food, clothes, shoes, etc., than he would pay if he lived within reach of the average city stores where market prices more generally control.

It seems strange that the miners' unions have not done what like organizations, similarly situated in other countries, have been doing for many years, to the great pecuniary benefit of their members. I refer, now, to the establishment, by those unions, of co-operative stores where all their members can, not only get their goods at cost plus a small percentage, but become partners in the business, participating in the profits in proportion to their dealings.

Labor Unions in America Suffer by Comparison With Those in Europe

Surely, there must be, in the unions of workingmen in America, the same kind of honesty, goodwill and business talent that has enabled the unionized workingmen of Europe, for nearly fifty years, without any let up in their fight for social recognition, to keep the cost of all necessities of life at the lowest possible level, while at the same time raising the standard of existence to a higher plane.

Let those who are interested in this subject study what has been accomplished by such workingmen's unions as *"Voruit,"* at Ghent, and *"Maison due Peuple,"* at Brussels. One should not be misled by glib talkers and amateur economists who tell us that the American workingman is different from the workingmen of other civilized lands. Like measures adopted for similar purposes, under similar circumstances, and similarly conducted, are bound to give, in this country, results similar to those attained in Europe. There is undoubtedly a difference between America and Europe; but in this as in many other things, the advantage is in favor of this country. What took fifty years to accomplish in the land of precedent and prejudice, where, as was the case in Belgium until a couple of months ago, the unions of workingmen were only tolerated, can be done here in one tenth of the time.

New York City. F. C. Cornet.

Installing a Power Cable in a Shaft

After reading the interesting and instructive article entitled "Some Methods of Suspending Electric Power Cables," by R. P. Hines, *Coal Age*, Apr. 15, p. 749, from which I gained much useful information, I am inclined to give a little of my own experience along the same line.

Although I am not an electrician, it fell to my lot to install a power cable in a hoisting shaft 365 ft. deep. The cable was armored and designed to carry alternating current, at a pressure of 2,300 volts, to operate a motor-generator set for charging storage-battery locomotives in the mine.

An Ingenious Method

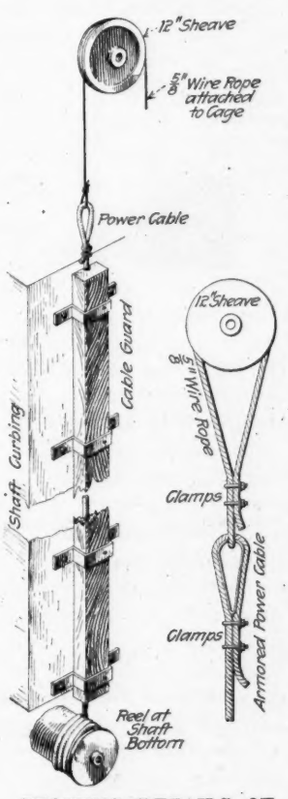
Instead of lowering the cable in the shaft, which might seem to be the natural way to make such an installation, I adopted the plan of starting from the bottom and hoisting the cable to the surface as it unwound from the reel at the shaft bottom. The reel was placed on the cage and lowered to the bottom of the shaft, where it was mounted on a steel bar and blocked up so that the reel would turn freely.

It should be stated, here, that the switchboard to which the cable was to be connected was located in the powerhouse, at a distance of 90 ft. from the shaft. It was necessary, therefore, to make allowance for this length of cable, which would enable it to be extended from the shafthead to the switchboard in the power house. For this purpose, the required length (90 ft.) was measured off on the cable, which was then doubled back on itself and clamped, using a cable thimble at the bend, to avoid injuring the cable, as shown in the accompanying figure.

The next step was to rig a 12-in. sheave on the tipple, about 15 ft. above the ground level at the surface. This being done, I employed a ⅝-in. wire rope, which had formerly been used as a means of retarding the movement of cars on an incline, and passing it over the 12-in. sheave lowered it into the shaft. The end of the rope was now put through the cable thimble previously mentioned, bent back on itself and clamped, as shown in the figure. The position of the 12-in. sheave, at the surface, was such as to allow the cable when hoisted to hang a few inches clear of the shaft curbing.

Cable Hoisted in the Shaft by Means of the Descending Cage

When all was ready, the upper end of the ⅝-in. wire rope was fastened to the cage waiting at the surface. The lowering of the cage had the effect to hoist the cable slowly in the shaft. When the cable had thus been drawn to the proper height it was secured in that position by clamping the ⅝-in. wire rope to itself under the sheave. The cable was thus held fast in the position in which it was needed in the shaft. On the right of the accompanying figure is shown the detail of the suspension of the cable after clamping the wire rope to itself and detaching the end of the rope from the cage. On the left of the same figure is shown the manner of protecting the armored cable, after it had been hoisted into position in the shaft. For this purpose, pieces of 4 x 4 in. yellow pine were sent to a planing mill where they were milled out on one side, the entire length of each piece. The milling was sufficient to give a snug fit for the cable, which was 1¾ in. in diameter. When these pieces were clamped tightly over the cable, in the shaft, there was sufficient friction to give it the needed support. This shaft being lined with cement, it was necessary to drill holes, in the cement curbing, for the expansion bolts that were to hold the clamps or bands, as shown in the figure.



SHOWING DETAILS OF THE INSTALLATION

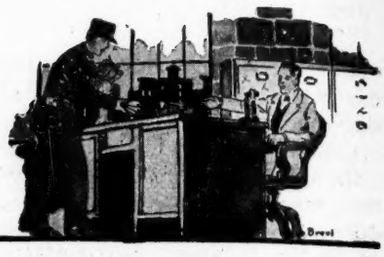
When all was complete, I arranged an emergency clamp, in the form of two blocks milled out and bolted together around the cable, a short distance above the top of the 4 x 4 in. guards. Although it is now nearly two years since the installation was made, this emergency clamp has not taken any of the weight of the cable, which is slightly slack below the clamp.

Kincaid, Ill. George J. Kearney.

Inquiries of General Interest

Answered by

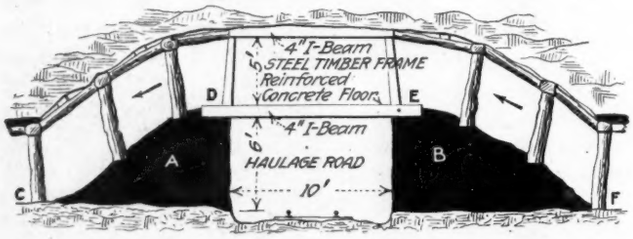
James T. Beard



Building an Approach to an Overcast, in the Ventilation of a Mine

LAST week I was visiting some friends employed in one of the largest collieries operating the Pittsburgh coal seam, within 100 miles of Pittsburgh. I was informed, that recently, a discussion had arisen among the mine officials regarding the effect of building an air-crossing or air-bridge, and excavating the coal up to the sidewall of the main road, on each side of that road.

In other words, referring to my rough sketch of an air-crossing built over a main haulage road, the coal is shown as having been left in, on each side of the main road, and is marked by the letters A and B. The question is, what effect would taking out this coal and putting in its place a good solid wall, on each side of the main road, have on the air current passing over the



STANDARD TYPE OF OVERCAST OR AIR-BRIDGE

bridge. It is assumed that the sectional area of the airway leading over the bridge is uniform throughout, being the same at the points marked C, D, E and F.

It was argued by one of the officials that if this coal is taken out and the space it occupied left vacant, the the result would be an eddying of the air at those points, which he thought would have a tendency to obstruct the current and diminish the quantity of air passing. On the other hand, it was claimed that the taking out of this coal would increase the area at those points and assist the flow of air across the bridge.

It should be stated here, that the roof in this part has given considerable trouble, numerous falls having occurred to obstruct the airway. For this reason, it was thought that it would be an advantage to use these vacant spaces, at air-crossings, for the purpose of storing material fallen from the roof. If the coal was taken out, it was said that a gangway plank could be arranged to enable men to pass over the air-bridge whenever necessary.

With a view to securing the opinions of *Coal Age* and its readers, regarding this proposed scheme, kindly permit its presentation, as I believe it is a matter of much importance in the economical operation of a mine.

McKeesport, Pa. ANDREW O. BAIN.

Referring to the figure which represents the sketch presented by this correspondent, there is no question but that the taking out of the coal, marked A and B in the figure, and leaving this space vacant in the airway leading over the bridge, would cause an eddying of the air on both sides of the bridge. However, it is our opinion that this would have little practical effect on the quantity of air passing over the bridge. The impact of the air against the solid wall, on either side of the main road, would add very slightly to the mine resistance but this would be inappreciable.

Coal Leases Operating in Alaska

WILL *Coal Age* kindly publish a list of the coal leases now operating in Alaska. For some time past, I have been watching the development of the coal resources in that region, and am greatly interested in its promise for the future. PROSPECTOR.

Yerker, Ky.

The following information has been received from a correspondent in Alaska, who is familiar with the development of coal in that country. The information is taken from the records and is therefore reliable and will prove of interest to many readers.

In the Chickaloon field, the Chickaloon Coal Co., Walter A. Gompertz, of Berkeley, Cal., manager, has been operating for the past two years. Recently, they have suspended operations, however, and we do not know whether or not they intend to resume.

The Matanuska Coal & Coke Co., Henry Baxter, of Anchorage, Alaska, manager, is in somewhat the same condition.

The Alaskan Engineering Commission, Sumner S. Smith, Eska, acting manager, mining department, is operating the Eska and Chickaloon mines.

In the Bering River field, The Bering River Coal Co., George Hazelett, of Cordova, Alaska, manager, is operating a lease; and the Alaska Petroleum & Coal Co., Clark Davis, Katalla, Alaska, manager, is developing some ground, a portion of which is under lease and on another portion they have secured a patent.

McNally and Maitland, of Anchorage, Alaska, are operating a mine on Cook Inlet, near Bluff Point, on which they have secured a lease within the past few months. This is an old mine and these gentlemen have been, for some time past, operating under a free-use, ten-acre permit. There are a number of people mining coal for their own use, on free-use ten-acre permits; but we have no complete list of these, at the present time.

There are also several smaller properties in the Nenana Coal Field with which we are not familiar. The names of these parties can probably be secured by writing to John A. Davis, engineer in charge of the Federal Bureau of Mines Experimental Station, located sometime since at Fairbanks, Alaska.

Examination Questions

Answered by

James T. Beard

Illinois Mine Inspectors' Examination
Springfield, Sept. 18, 1916

(Answered by Request.)

Ques.—What is the difference between a coal seam and a mineral vein?

Ans.—A coal seam is a bedded deposit and conforms with the original stratification of the formation. It is, in other words, a sedimentary deposit. On the other hand, a mineral vein has been formed by the filling in of a crack or crevice in the rock formation. Not being a bedded deposit, a vein may have any direction with respect to the stratification. The crack or fissure may have been filled by intrusion of volcanic lava from below; or by the infiltration of water carrying mineral matter in solution and coming either from the surface or from the inclosing rock strata, the mineral matter crystallizing, later, and forming a solid incrustation on the walls of the fissure or completely filling the same.

Ques.—A steam jet and a fan, both acting together on the air in an upcast shaft, produce 75,000 cu.ft. per min. When the fan is stopped, the jet produces 15,000 cu.ft. per min. What quantity of air would the fan give alone?

Ans.—Assuming that there is no change made in the circulation of the air in the mine and the shaft, the mine potential or the resisting power of the mine is constant. In that case, the power producing the circulation is proportional to the cube of the quantity of air circulated. Then, since the total power on the air, due to the combined action of the fan and the steam jet, is equal to the sum of the powers due to the action of each of these agencies alone; and since the power on the air is a function of the cube of the quantity of air circulated, it follows that the cube of the total quantity circulated by the combined action of the fan and the steam jet is equal to the sum of the cubes of the respective quantities circulated by each of these agencies acting alone. Therefore, calling the quantity of air due to the action of the fan alone, x, since the quantity produced by the steam jet acting alone is 15,000 and the two agencies acting together produce 75,000 cu.ft. per min., we have

$$75{,}000^3 = x^3 + 15{,}000^3$$
$$x^3 = 75{,}000^3 - 15{,}000^3$$
$$x = 1{,}000\sqrt[3]{75^3 - 15^3}$$
$$= 74{,}800 \textit{ cu.ft. per min.}$$

which is the quantity of air that the fan would produce when acting alone, the conditions in the mine remaining unchanged.

Ques.—How many tons of coal underlie a square field containing five acres, the seam being six feet thick and lying at an angle of fifteen degrees, the specific gravity of the coal being 1.325?

Ans.—An acre of land contains 43,560 sq.ft. The cubic contents of a 6-ft. seam of coal underlying five acres and inclined at an angle of 15 deg. is

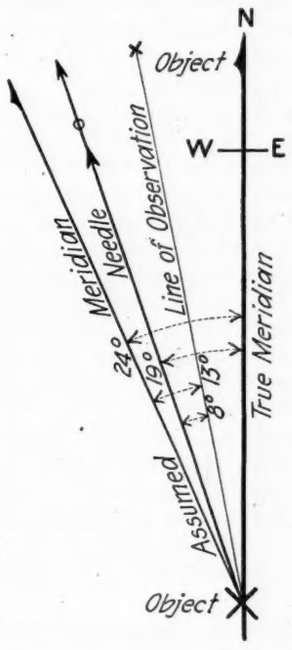
$$5(43{,}560 \times 6) \div \cos 15^\circ$$
$$= 1{,}306{,}800 \div 0.96593 = 1{,}352{,}900 \textit{ cu.ft.}$$

Then, taking the specific gravity of the coal as 1.325, referred to water as unity, since the weight of a cubic foot of water is 62.5 lb., the weight of coal in this five acres is

$$(1{,}352{,}900 \times 62.5 \times 1.325) \div 2{,}000 = \text{say } 56{,}000 \textit{ tons.}$$

Ques.—What would be the variation of a plan's meridian when the bearing of two objects thereon with its meridian is N 13 deg. E, and the bearing of the same two objects on the surface is found by an instrument whose needle has 19 deg. of west variation, to be N 8 deg. E.

Ans.—If the needle has a variation (declination) of 19 deg. W, and the magnetic bearing of the line joining the two objects is N 8 deg. E, the true bearing of this line is found by substracting the magnetic bearing, which is east, from the declination of the needle, which is west. The difference (19 — 8 = 11 deg.), being an angle to the west, the true bearing of the line is N 11 deg. W. The accompanying figure shows the relative positions of the true meridian, the line of observation joining the two objects, the magnetic needle and the assumed meridian of the plan. It will be observed that, since the line joining the two objects has a bearing of N 13 deg. E, referred to the assumed meridian of the plan, the angle between this assumed meridian and the true meridian is given by adding this bearing referred to the assumed meridian to its true bearing, which gives an angle of 24 deg. to the west of the true meridian, and the bearing of the assumed meridian is N 24 deg. W.



Ques.—What is the difference between a horseback and a step fault?

Ans.—What is known as a "horseback," in mining, is a hump or swelling, generally occurring in the floor of the seam, and causing the thinning out of the coal for a short distance. On the other hand, a step fault is a true fault, being an actual dislocation or slip in the strata. In that case, a break has occurred, crossing the stratification at more or less of an angle with the bedding plant. The strata on one side of the fault line has been thrown up or down, producing a sudden break in the continuity of the seam. The fault is called an "upthrow" or a "downthrow," according to the direction the slip has taken. In either case, it is a step fault.

Wholesale Coal Association Brief Opposes Seasonal Coal Rates

Such Legislation If Passed, the Organization Contends, Would Be But a Prelude to Further Interference with the Coal Trade

BECAUSE no member of the Frelinghuysen subcommittee disapproved of the bill providing for seasonal rates on coal, no minority report was available for the use of the full Committee on Interstate Commerce of the Senate. With the idea of placing some of the opposing views concisely before the full committee the American Wholesale Coal Association submitted a brief on the subject to the full committee. Extracts from the brief are as follows:

"The advocates of the bill, except two associations of operators in the far West, have had no experience as producers, consumers or distributors of coal. The opposition to the bill was by those who have had the broadest experience with coal.

"The experience of the nation during the last four years proves that it is impossible to regulate part of the coal business without regulating all of it. And, it is impossible justly to control coal without controlling all allied industries. That proposition rests upon our knowledge and belief that you cannot control the distribution of coal without influencing the price.

"If by statute you influence the price of coal you must soon so control that price that the coal man may avoid bankruptcy. If by statute you control the price of coal you must undertake to control the cost of production. You must naturally assume control of the wages of miners and regulate competition of the coal producer.

"If by statute you undertake to control the competition of the coal producer you must control all of the coal land of the United States to such an extent that you may say by law who may and who may not open coal mines and when and where those mines may or may not be opened.

"As a rule it is the common practice of all legislatures to try to correct a mistake not by repealing the law but by undertaking another and larger experiment. Thus, when the first and second experiments prove at fault, the common practice is to try a third experiment. Thus, if this statute is passed it will, we believe, be but the overture of a program.

"In support of our contention that this proposed legislation cannot be final but must be merely the initial step in a long chain of legislative acts we refer specifically to the history of the Interstate Commerce Commission. It started out to supervise rates. It progressively came to control rates, cost of operation and finally financial return.

"This measure cannot be effective without coal storage, which is so difficult and expensive as to be practically impossible in any general sense.

"As a matter of fact the storage of coal is a very difficult and delicate undertaking. If it is to be done successfully, it must be done according to the most scientific methods. Some coals will store in the open if not piled higher than a limited number of feet. Other coals will store safely in the open if protected against the infiltration of water from below. A few selected coals will store in the open if the sizes are very carefully segregated. Still other coals will store safely in the open if they are practically hermetically sealed.

"Some sizes of coal will not store at all unless free from alternate wetting and heating by the rain and sun. In some coals the larger sizes will store under certain conditions, while the smaller sizes of the same coal will not store at all.

"Regardless of all these technical niceties which have to be observed, the hearing before the sub-committee proceeded on the theory that no precautions whatever were necessary. The whole matter was passed over so lightly that there was not called before the sub-committee a single witness who could qualify or who tried to qualify as an expert on coal storage questions.

"The railways have today less than enough cars to move the coal even though all cars are employed steadily throughout the year. Under such conditions—known to all coal users—we cannot believe that summer movement of coal needs any legislative stimulant.

"Besides, there is known to be a coal shortage today. In fact, the high prices now charged for coal are directly attributable to a shortage of cars and to the competition of users for the less-than-sufficient amount of coal produced. We fail to see wherein there is any danger that coal cars will be idle unless freight rates are reduced by law. The current information is, on the contrary, that the coal mines are losing two million tons of production per week merely because the railways have not cars enough to move the coal.

"The bill is presented as an amendment to the Interstate Commerce Act. However, it is neither designed nor intended primarily to be a regulation of the carriers or of interstate commerce. Its essential purpose is to reform the coal industry and the practices of the people respecting their coal purchases.

Legitimacy of Regulation Questionable

"We wish to call to the attention of the committee the doubt which will exist as to whether such a purpose falls legitimately within the scope of the Interstate Commerce Act.

"We are disposed to hold that if it is either desirable or necessary to regulate or reform the coal industry by statute, the intention to regulate and reform it should be labeled for what it is. Especially are we disposed to say that this thing, if done at all, should be done under the powers which Congress has over private business rather than under its powers over commerce.

"If Congress has under the Constitution no power to regulate a private business we contend it is an immoral invasion of the rights of coal merchants and producers to seek to exercise such control under the subterfuge that an attempt is being made to simplify transportation by an amendment to the Interstate Commerce Act.

"We most respectfully direct the attention of the committee to the fact that the studied effort of this nation for a long period of years have been to divorce the coal industry and the transportation companies. And yet by this statute they are united for the purpose of enabling the carriers to try to reform coal. We contend that this amounts to a reversal of the nation's fixed program. We are convinced that it is a measure to which if understood the people will not give their consent.

"Finally, we wish to suggest to the committee that the issue raised in this proposed legislation amounts to such a reversal of our public policy since the establishment of this Government that it is an undertaking which should not be entered upon without the whole matter being first placed before and decided by the whole people."

The Labor Situation

Edited by
R. Dawson Hall

Strike of Shopmen on Virginian R.R. Curtails Coal Production

THE strike of shopmen at the Princeton (W. Va.) shops of the Virginian R.R., in which about 1,200 men were involved, had not been settled up until the last of May. On the contrary, it had extended to the piers of the Virginian R. R. at Sewalls Point, Va., and had brought dumping of coal at such piers almost to a standstill. As a result of the shopmen's strike practically no coal at all was mined on the Virginian R. R. during the last week of May.

Notice was served on the strikers toward the end of the week that unless they returned to work at once their places would be filled by others. It is stated that a number of striking shopmen have left the city of Princeton and that others have sougnt new employment.

Seven Alleged Union Organizers Arrested In Pond Creek

SEVEN men, all of them said to be union organizers, were arrested on Pond Creek, Wednesday afternoon, May 26, by officials of Pike County, Kentucky. At the time the alleged organizers were arrested they were on their way from Williamson to Stone, Ky. A movement is now in progress having for its aim the organization of the Pond Creek mines in Kentucky, adjacent to Williamson.

It is charged by the deputy sheriffs making the arrest that the men were extremely suspicious in their actions and that when searched pistols were found on them. The men arrested were: Lee Hatfield, Lindsey Tackett, Dave Connoly, James Parsons, Joe Hatfield, Martin Justice and Fred Hatfield. Those arrested were given a hearing at Pikeville on May 27 and were bound over to await the action of the grand jury, the charge against them being conspiracy. All the men furnished bond.

Though Organization Is Incomplete, Union Tries to Control Williamson Field

OFFICIALS of the United Mine Workers in the Williamson field have already begun to say who shall work and who shall not work, even though that field has not yet been entirely organized.

The Burning Creek Coal Co. is just completing construction work on a new plant at Kermit, W. Va. While the tipple has not been completed and the siding is not ready for use, the company has decided as a part of its development work to haul coal by wagons to the railroad and ship coal pending the completion of its plant. It had not had any trouble with miners because it had not attempted to operate.

When, during the last week of May, the company indicated that it would begin mining and shipping coal, a notice was served on the company by Don Vinson, president of the local at Kermit, that it could not operate. Vinson, it might be mentioned in passing, is not a miner but a farmer.

Fine for Failure to Report for Work Causes Strike near Terre Haute

MINERS employed by the Vandalia Coal Co.'s mine east of Terre Haute struck May 24 because the company had assessed and collected from them a fine of $1 each for failing to report for work Saturday, May 15.

The company asserts that the men took concerted action to observe their Saturday holidays, while the miners contend that each miner acted on his own initiative and that there was no agreement to remain away from work. Heretofore the Saturday holiday trouble has been confined to district No. 11, but it spread to district No. 8 May 23, when about 250 miners failed to report for work. All these men will be fined $1 by the company, officials stated.

French Coal Miners Return to Work

COAL miners of France, who have been on strike intermittently for several months and recently supported the railwaymen in their strike for nationalization of the roads, are now reported to be all at work.

It is computed that the 120,000 miners affected lost wages totaling 40,000,000 francs and caused a loss in production of nearly 800,000 tons of coal, which must be replaced by imports. It is also pointed out that production will be lessened another month because of the long idleness of the miners, and there will be a further economic loss to France in sending money out of the country for imported coal.

Clinton Shotfirers to Receive Wage Increase

SHOTFIRERS at a number of coal mines around Clinton, Ind., who have been idle since May 6, refusing to work for the scale of $8 a day, all returned to work May 24. It is said their demands have been met by the operators and, although no official announcement has been made as to the basis of settlement, it is understood that they will receive an increase of 13 per cent over their former pay, which was fixed by the miners at each mine and which ranged from $10 to $15 a day.

Adjust Strike of Raymond City, W. Va.

A TEMPORARY adjustment has been reached in a strike of about five hundred miners employed by the Otto-Marmet Co., Raymond City, Putnam County, West Virginia. The strike is reported to have followed the arrest of one of the miners for violation of the mining law of West Virginia in shoveling from the solid.

Williamson Operators Decline to Co-operate in Organization

Enlist Service of Sheriff to Supress Intimidation and Begin Newspaper Propaganda Campaign to Combat Efforts of Organizers

OPERATORS of the Williamson field have declined to negotiate with the United Mine Workers for the organization of the Williamson field and in an interchange of communications with officials of the United Mine Workers have made it plain that they believe no useful purpose could be served by any meeting with the miners.

The suggestion for a meeting was made on Thursday, May 27, by Fred Mooney, secretary of district 17, and C. H. Workman, a board member of the same district, the communication from Mooney and Workman being couched in the following language:

"To the Coal Operators of Mingo County and Vicinity:

"Learning that you are in session in the City of Williamson, and desiring to bring about a feeling of good will and comity between the coal operators of this section, and desiring especially to receive your co-operation in assisting the legally constituted authorities of the city, county and state in maintaining peace and upholding the supremacy of the law, we hereby propose that you meet us, the representatives of the United Mine Workers of America, representing the bulk of the miners of this immediate field, in joint conference. We feel that the mutual interests of all parties concerned would be materially promoted by such a meeting."

On the same day a committee of operators sent a response to the above communication as follows:

"A number of the coal operators of the Williamson field were in consultation today with the Sheriff, soliciting the activity of his office in the preservation of law and order in Mingo County. They were brought to this necessity largely, if not wholly, because persons not residents of this county have busied themselves during the past few weeks provoking discord and hostility between them and their employes.

"We have reported to the sheriff the fact that large numbers of men are parading the county, armed, and are menacing and threatening workmen engaged in the mines, and preventing them by threats and menaces from performing their work, and we have solicited him as the peace officer of the county for the protection of our employes. In consequence of this state of public outlawry numbers of workmen in the county are terrorized and are afraid to go to and from their places of work, and the mining industry in the county, at many places, is in a state of suspension.

"As citizens and property owners of Mingo County, we are hopeful that the officers of the county will, by the exercise of their constituted powers, be able to restore order in the county and maintain the law. With them in this aim we expect, as citizens, to co-operate to the very limit of our capacity, and trust that all law-abiding people of the county will feel a similar interest.

"We find no objections to your having similar consultations with the sheriff, if it should appear to you as non-residents that your concern in Mingo affairs is sufficient to warrant the presumption, but, replying to your invitation to meet you in conference, we must beg to believe that no useful purpose can be served by the arrangement.

"The concern of the people of Mingo County is in upholding the law, protecting property and preserving life as well as the reputation of our community."

Counter propaganda is a part of the program of the operators to offset the propaganda of the United Mine Workers circulated in Mingo County in an effort to organize that field. As the first step in the campaign of counter propaganda the operators have procured space in the newspapers published in Mingo County in order to present their side of the case.

It is pointed out by the operators in the initial statement made to the miners and other citizens of the district that the operators have property in the field valued at from $30,000,000 to $40,000,000, that they pay the taxes largely through which public institutions, public schools and public roads are maintained, and that they employ in their own industry more than five thousand of the best-paid workmen in the land. The operators also assert that "These operators are a permanent part of this community, and claim the right, above all question, to take their own part and to speak upon the welfare of the neighborhood and their business.

"The operators propose to show that the organization of this coal field by the United Mine Workers would prove hurtful to the coal industry and therefore damaging to the entire community. They ask their employees and all citizens to keep an open mind on the subject until they shall have fully stated their case."

President Wilson Names Anthracite Wage Commission

PRESIDENT Wilson has announced the appointment of an Anthracite Coal Commission, composed of three members, which will arbitrate the points in controversy in reaching a wage agreement between the anthracite coal operators and mine workers.

The members of the commission are Dr. Willian O. Thompson, president of Ohio State University, representing the public; Neal J. Ferry, of McAdoo, Pa., a member of the Executive Board of the United Mine Workers, representing the miners, and William L. Connell, an independent coal operator, of Scranton, Pa., representing the operators.

The appointment of the commission was announced by the President in a long proclamation reviewing the efforts to negotiate a new wage scale. A decision is to be rendered within sixty days, if possible, which will be made "the basis of a new wage agreement between the anthracite operators and miners in such manner as the commission may determine," to be effective from April 1.

As both sides have signified their willingness to accept and abide by the award of a commission thus constituted, a satisfactory settlement of the matters in dispute is confidently expected at an early date.

Officials of the United Mine Workers of America have expressed themselves as being well pleased with the men named as members of the Anthracite Commission. Ferry's name was suggested for membership by the mine workers and Connell has always been considered a friendly operator by the miners. Therefore while the mine workers know little about Dr. Thompson, they feel sanguine that they will get a square deal from the commission.

Before adjourning, Congress appropriated $10,000 for the expenses of the commission.

West Virginia Coal Managers Discuss Their Operating Problems

Suggestion That Railroad Equipment Be Transferred to Holding Corporation—Visiting Nurse and Mining Education Are Discussed—Lessee Ought To Be as Interested as Lessor in Conservation of Coal, for He Has Most at Stake

OWING to the labor unrest along the Tug River and in the Guyan region, the West Virginia Coal Mining Institute's' twenty-second semi-annual session at the Frederick Hotel, Huntington, W. Va., was not as largely attended as usual, though its discussions did not seem to suffer from the dearth of members. On the opening day there were 37 present, among whom could be numbered not a single coal company man living in the city in which the meeting was held. This was perhaps quite natural in view of the fact that the operators who live in Huntington and Williamson are just now the objective of a concerted attack from the United Mine Workers, and they are quite busy coping with it.

Operators in a large section of West Virginia continue to question whether it pays to provide for an extraction of 90 per cent or more. They still believe it cheaper not to invest a dollar now in early entry development but to throw away a dollar or more in waste of development later and a number of operators in other states have a similar point of view.

In place of D. W. Brown, an attorney of Huntington, the address of welcome was given by Mayor Campbell, who emphasized the importance of the transportation needs of the country and the difficulties under which coal operators labored by reason of car shortage. He added that the Association of Federal Reserve Banks at a recent meeting, held within closed doors, had suggested that this problem be met by the turning over of all railroad equipment to a holding company which would hereafter provide for the equipment needs of the whole country, placing cars wherever at any time they happened to be in demand.

On this suggestion the mayor made little comment. It may be said, however, that it has certain somewhat obvious advantages. Cars are placed where there is need for them and it is done without the probability that the pooling will result in indifference as to the purchase of cars. As it is today, the pooling arrangement have taken cars from railroads which provided them and have given them to railroads which made only indifferent provision for the purchase of cars. This discouraged both railroads from buying cars, for it does not pay a railroad to buy equipment if in time of greatest need it does not have the use of it, and if a railroad, not having enough of its own equipment, can depend on a pooling arrangement to give it the cars of others, it has no incentive to buy in adequate quantities. While a holding company for car equipment would be unjust at the start, as tending to the disadvantage of provident companies, it might perhaps work no further injustice, and the incentive to buy would not be impaired as it is when ownership of a private corporation is fully recognized during a car plethora and denied as soon as there is a car famine. As it is now, the responsibilities of ownership are more obvious than its privileges and in consequence ownership of railroad property and equipment is no longer sought by any one.

J. R. Cameron, of Bluefield, responded in a few words to the Mayor's cordial address. As usual, the vice-presidents and the members of the executive board were called on for remarks, Frank A. Haas, of Fairmont, and E. D. Knight, of Kayford, responding briefly. A committee on resolutions was appointed, composed of R. Dawson Hall, Frank R. Haas, V. E. Sullivan and Lee Ott.

Dan Sowers, superintendent of welfare work, Portsmouth Solvay Coal Co., Edgarton, W. Wa., and his promised substitute, Mr. Mackintosh, not being present, W. A. Craven, of the S. J. Patterson Pocahontas Coal Co., Arista, W. Va., gave an impromptu address on "Does Welfare Work Help Production?" Mr. Craven said that he felt that it did, yet that at the same time there were adverse influences tending to decrease production, and in consequence the increased productivity might not be forthcoming, no matter how diligently welfare work was pursued. He remarked that what is looked upon one day as a luxury becomes shortly after a necessity, demanded by the employees and perhaps incorporated in state law as a positive requirement. A few years ago the Weyanoke Coal Co. opened a bathhouse for its men. It was perhaps the first bathhouse in the state, and the mine workers had hardly any use for it. They preferred to perform their ablutions at home. But now bathhouses are beginning to be no longer classed as welfare provisions but as operating necessities.

J. W. Bischoff declared that welfare work was most successful when it was most diplomatically approached. He had introduced the Young Men's Christian Association activities into his camp, but he felt and the association felt that the first work should be recreational and that the impulse to use the facilities for religious meeting should be the outcome of the better class sentiment in the neighborhood.

V. E. Sullivan declared that he believed that welfare work to be successful must include the women and children in the homes; that only in that way would the advantage of the work be reformative enough to be truly lasting. The pride of the foreigner in the institutions of this country and in the opportunities it afforded him would only be apparent when his wife and children shared with him in its benefits.

Along the same line and in favor of the village nurse were the remarks of R. Dawson Hall. He said that it would be found that the work of the village nurse was only secondarily nursing; that once nurses were intro-

duced their influence would be felt in the better feeding, housekeeping and hygiene of the neighborhood. The byproducts of nursing were as valuable as the main products. He emphasized, also, the mischievous part often played by the mine clerk and the company doctor. Many mine clerks become greatly harassed by their multifarious duties and in consequence are not diplomatic in dealing with payroll disputants and many a doctor with his bluffness and lack of sympathy with the sick creates enmity in camp where harmony would ordinarily prevail.

Mr. Hall advocated the greater employment of women as assistant mine clerks. Not usually so perturbed as men by their many disturbing duties, they tend to meet payroll difficulties rightly in the beginning before feelings become unduly exasperated. With a woman clerk the employees are disposed to discuss quietly and sanely whatever errors they may think they have detected in the fortnightly statement. The work also offers something of a career to the girls of a mining village. It is well recognized that there are few, if any, careers for women folk around such communities and the tendency should be as far as possible to find such places for those who are competent to fill them, giving practical experience and finding executive positions for those who are clerical work.

Company Provides Churches and Dance Halls

J. N. Schweitzer, general superintendent, Lundale Coal Co., Lundale, W. Va., referred to the introduction of a Red Cross nurse into the Lundale village. He said that now, when there is sickness in the home, the man is still able to go on working, which is good for him, his family and the company. The nurse does not necessarily stay in constant attendance on the patient but she finds somebody who will, and thus the man is released for his work. The company with which he was connected had built three churches for its employees—a Catholic, a Protestant and a church for colored people. It had a dance hall for white people and one for colored and baseball teams and playgrounds for both classes. It started a local mining institute which met once a month and discussed such questions as "Motor Haulage versus Mule Haulage for Gathering," "Best Way to Maintain Room Tracks," "Best Method of Disposing of Slate" and "Timbering." The company had a dairy with thirty cows and was providing good milk. It had a farm of twenty or thirty acres, so as to have the freshest vegetables for sale.

Frank Haas spoke in favor of the visiting nurse. He declared that there was a degree of suspicion when the nurses entered the work, but the diplomacy and sacrificing devotion they displayed soon overcame all the malicious criticism. They were extremely welcome now at all homes. He confirmed the idea that nurses did not serve simply in the capacity that their title designated. It was perhaps the least important of the services they rendered, excellent and useful as it was.

In a few words, E. D. Knight, chief engineer of the Cabin Creek Consolidated Coal Co., Kayford, W. Va., then appraised the value of the "indirect approach" to mine problems through the school and the home and instanced the cordial and even financial recognition by the men in the Cabin Creek Valley of the work of a minister and school teacher whose community work had been gratefully received. The chairman, J. R. Cameron, having appointed as members of the auditing committee H. E. Gray, W. E. Fohl and J. S. Walker, declared the meeting adjourned.

In the afternoon A. C. Callen, professor of mining, West Virginia University, Morgantown, W. Va., spoke briefly and well on "West Virginia's System of Mining Education," adding the contents of an excellent paper on the subject. Mr. Callen urged that the operators of the state show a greater interest in the school, which with an annual appropriation of $10,000 a year is utterly unable to meet all the needs of the second greatest coal-mining state in the country.

He spoke of the three forms of instruction—the four-year course, the six-weeks' summer course and the courses in the field and of the need there was that the field instruction should be supplemented by addresses given by local men. Unfortunately, many local mining authorities are not good instructors. The cleverest men, he said, are quite apt to speak over the heads of their classes and merely mystify and tire them.

The discussion on this subject went somewhat adrift, for the breadth of the teaching at the West Virginia University and its extension work is so great that the specialized aims of the various parts of it are apt to be overlooked. The four-year college course is for engineers, superintendents and managers. The six-weeks' course is for mine foremen and putative mine foremen. The extension course is for the subordinate officials and for those who are seeking—on their way upward doubtless—such positions. There is a degree of commingling of purpose doubtless. A good way to become a competent manager is via a mine foremanship and consequently it is probably true that some college men have this foremanship in view or at least it might be better if they did, whether they do or not.

Practice a Necessary Supplement to Study

But while college work needs supplementing by practice there is other practice besides that of work at the face, loading, dumping, ditching, slate picking and what not. Surely, practice in surveying needs a certain period of apprenticeship. Laying out railroad tracks, mine tracks, switches, following coal outcrops, designing houses, evaluating properties, studying coals, boring, locating dips, laying out plants, calculating stresses, loading and unloading machinery, building foundations, etc., etc.—are not these also things needing experience just as long and as painstaking as should be given to shoveling and handling the pick? The so-called "practical" men were present who regard the manual as the only occupation needing the skill that time alone can give. The college, they believe, can develop ripened judgment as to the largest of mine operations but cannot inform the scholar how he should tap the roof, hold a bar when taking down slate or drill a hole and tamp it.

Josiah Keelay said that he was afraid that few individuals around the mines would wait sixteen years to go into the mines, spend five years underground to get a certificate and the four years at college, and after all this painful experience and expensive training be content with a mine foreman's certificate. He would like to see the age limit for entering the mine set at fourteen instead of sixteen. A boy around the mines between fourteen and sixteen, if normal, could hardly do otherwise than get into trouble in those two years when the law thought him too young to work but somewhat too old to be compelled to attend school. He feels

to be too important to be doing nothing and as all the avenues of employment around a mining village are closed to him there is no other course than for him to spend his latent energies in bedevilment.

The chairman remarked that in leaving college he had gone to work in the machine shops and for only 18c. an hour, but he would have hesitated if that part of his practical experience had been lengthened to five years, hence he thought that a college man should be allowed some reduction in time when seeking a certificate of competency as a mine foreman. Surely the five-year period should be cut in two or even reduced to two years.

Desire to Escape Hard Work Is Widespread

J. E. Vaughan, state mine inspector, said that one of the great drawbacks today was the desire of everyone to escape the burden of physical labor and to seek jobs as managers without having the competency of the workingmen whom they presumptuously undertook to direct. He defended the law which required that a boy be sixteen years of age before he went to work and the requirement that five years' experience at the face be required of men who are to be mine foremen. As one man remarked after the meeting, "We are faced with a condition. Mr. Vaughan may desire to set the world right. Let him do it if he can, but my judgment is that if the present standards of experience are required no college man will try to become a mine foreman, and if it is made obligatory that he become one on his way to higher executive positions, then the coal industry will have no college-trained engineers."

W. A. Craven wanted to know of Mr. Callen what effort was made in the six-weeks' course to teach costs of production. Mr. Callen replied that such training was regarded as merely incidental though it was emphasized in all the various departments of work. H. E. Gray and C. K. Brown, one the West Virginia University instructor at Elkins and the other occupying a like post at Moundsville, who also spoke, emphasized the work they are doing in that direction, the former saying that many of the students came to the work impressed with the idea that the cost of coal was practically the cost of loading it into the mine cars.

Messrs. Vaughan, Sullivan and Golden, state mine inspectors, then discussed safety and the necessity of the mine foreman's replacing his recommendations as to safety by commands which he personally sees are obeyed. R. Dawson Hall remarked that the state had a lot of men in its employ to whose duties might have been added the work of mine inspection. The legislators believed it best, however, to leave the work to men specially equipped and specifically paid for that office.

When, on the other hand, it wanted the operator to provide for safety it laid the burden on an executive officer who was already busy enough and whose work was daily becoming more burdensome—the mine foreman. The law required him to find time for safety inspection out of the multifarious commitments which his position as mine foreman—that is the executive officer of his mine—entailed on him. What wonder he neglected possible danger, a mere policing of the mine, for duties that were immediately necessary, which the economic needs of the mine demanded in no uncertain voice!

Successful supervision can never be obtained from men with recognized economic functions to perform, men responsible for the tonnage, men who are called to solve the actual difficulties which must be met as and when they present themselves. Patroling the mine is not work for men of this kind. Better make tax collectors and tax appraisers mine inspectors, for taxes can be collected at definite times, but mine difficulties—a wreck, a broken engine, a loosened water tube, a fallen fire arch, a stopped fan—must be immediately attended to; meantime the inspection of the company's employees is suspended. Specialization is needed if mine inspection by the operators' employees is to be made a success.

The morning session of the second day opened with a discussion on local mining institutes, the president saying that he had under instructions of the executive committee, which met April 17, invited each local mining institute to send two representatives of the meeting to discuss co-operation between the West Virginia Coal Mining Institute and their local organization. As none of the local institutes had held sessions since that time they did not have an opportunity to arrange an acceptance of the offer made and this meeting had to be content to listen to what the members of the West Virginia Coal Mining Institute thought would make the best line of co-operation.

Publicity to Sustain Interest in Meetings

A little pamphlet advising as to the recent and coming meetings of the locals apparently has been decided on as a means of sustaining interest by competition and publicity. It was suggested that the appointment of a paid secretary would be a positive service that would be appreciated and that though funds were inadequate a worthwhile secretary would take care of that difficulty. But no one seemed willing to have the association shoulder the risk even within the limits of its present surplusage and no one was mentioned who was likely to accept the proposed secretariat. Besides, what money was on hand was needed for publishing the proceedings. After talks by Bischoff, Vaughan, Reed, Craven and Hall the chairman left the matter to a committee on local institutes—Carson, Vaughan, Reed, Haas and Craven.

Discussing the matter of the "Relation of Percentage of Extraction of Coal Area to Cost of Mining," R. F. Carson read a short paper on the advantages of high-percentage coal recovery. W. E. Fohl, who followed, declared that the percentage of recovery regarded as somewhat generally feasible was about 90 per cent. Such a percentage gave about 1,500 tons per acre-foot. With a 60 per cent extraction only about 1,000 tons could be obtained for each acre per foot of coal thickness.

Where one desired to get as much coal with a 60-ft. extraction as he would get out of a 1,000-acre plot with a 90 per cent extraction he would be compelled to buy not 1,000 acres but 1,500 acres, or 500 acres more than what with frugal coal getting would have supplied his needs. If this is 6-ft. coal and the price is $50 per acre-foot the coal land will cost $300 per acre, or $150,000. This will be quite a burden in the cost of coal production. Moreover, the larger acreage in the mine will involve more haulage cost, more drainage charges, high cost for ventilation, more timber, more rails, ties and electric wiring, in fact, an innumerable number of costs, many by no manner of means small.

It was suggested by another that the cost of coal in the hill was raised by the amount of money expended in its development, that the more coal a given plant produced the greater the saving on first cost, that it was profitable to take out near-hand coal clean even if the work were barely profitable, for the near-hand coal had at least the benefit of a short haul and waiting on its extraction delayed the inevitable expenditure of money for mine extensions and the charges for long hauls, expensive ventilation and what not. Moreover, an excessive land purchase at the commencement of operations involved large interest charges and taxes. It would pay best to buy less and use all of the coal purchased.

Mr. Kealey had a word about leased coal, but leased or not leased there are still development charges, and leased coal should not be wasted, the saving being based not so much on a desire to spare the property and salve feelings of the lessor as because to waste the lessor's coal is to waste the development of the lessee and make further operations more expensive.

Proper Extraction Necessary to Economy

Operators rarely have the matter of the economy of complete extraction put up to them in the proper light. It is to be pursued not only to save the expenditure for acreage but to save the outlay for development and to cheapen operation. The expense of driving advance heading enough to make a panel retreat is not so great as to overbalance all the economies of complete extractions when that extraction is made at the most favorable time and in the proper manner.

Frank Haas said that the recovery of coal pillars in the old workings of the Georges Creek region had been abandoned, but with much regret. At first the Consolidation Coal Co. obtained its output partly from new workings scientifically laid out to secure a maximum recovery and partly from the pillars of the old workings. The coal from the latter was extremely expensive, but the price obtained for the coal still made it possible to take the bitter with the sweet and run the mine with a proper degree of profit.

Gradually the new workings grew less and old workings formed a larger percentage of the whole. The outcome was, of course, not favorable, and with regret the recovery of old pillars was abandoned, but the means of access was left as before, and when it is feasible to pay the price the coal can be and will be recovered. No steps have been taken that will prevent recovery or make it difficult when the time for the work arrives. In fact the idea is merely to delay till a more favorable market makes work on the pillars profitable.

G. S. Jaxon, of the Link Belt Co's. Huntington branch, then read a paper on "Outside Coal Equipment." He stated that the plant should in every case be suited to the characteristics of the market to be entered and of the coal to be loaded. Figures should be given to the manufacturer, of the approximate percentage of each size to be accommodated, though with well-adapted equipment there is a certainty that the percentage of large coal will be increased considerably, and for this the designer will make full allowance. The operator should not ask for an hourly capacity based on a full eight hours' run, for no tipple works steadily for the full eight hours of running time. There are always delays more or less important due to wrecks and arrested transportation.

A six-hour day is about all that can be figured on. The hourly capacity should therefore be assumed as one-sixth of the daily capacity. Operators should not be satisfied merely to meet the present-day demands of the market they are entering or have entered for there is a growth in the demand for preparation and sizing, and consequently what is not demanded today is apt to be required tomorrow. But if the equipment is shaped to today's needs and not to those of tomorrow the outcome will be failure, for the equipment will have to be entirely overhauled and the tipple itself modified. Mr. Jaxon declared therefore that the operator must anticipate the future as far as he can, or he will have to rebuild every few years.

In the afternoon Joseph W. Reed, director of safety, Consolidation Coal Co., Fairmont, W. Va., read a paper on "Organization Methods and Results of Safety Departments," emphasizing the importance of a disposition toward safety as against a reliance on organization as if the latter were in itself an ameliorant of unsafe conditions. Safety work should be of two kinds, constructive and instructive. Every part of the plant should be made as near safe as construction can make it. Then officials and workers should each be trained in the needs of safety. He said the first dollar per man spent in instructive work with two dollars per man spent in constructive work will save five dollars in compensation. Another dollar in instructive work and no further expenditure in safety construction will save three dollars more and another still two more dollars. Thus the three dollars for organization and two dollars for construction will save ten dollars in compensation.

Machinery Vital During Labor Shortage

J. W. Knowlton, of the West Virginia Coal & Coke Co., Elkins, W. Va., read a paper on "Mechanical Coal Loaders" in which he expressed forcibly the need which exists for the development of these devices in an age when labor is at a premium and skill more readily than ever obtainable. Labor with the large muscles of the back is being replaced by labor with the small muscles of the forearm backed by machinery and electric power.

The committees then presented their reports. The committee on resolutions presented a motion urging the legislature of West Virginia and the governor of the state to provide $25,000 or more per year during the next biennium for the support of the mining courses, regular, shorter and extension, provided by the West Virginia University; it also laid a resolution before the meeting advocating the appointment of more inspectors.

The auditing committee approved the accounts in a report which was accepted by the institute, and the committee on local mining institutes introduced a resolution granting to such institutes the right to take out from two to ten memberships in the name of such institutes, paying for each membership $5 per year, the number of memberships thus taken being limited to one for every ten members in the local institute. The delegate members would have the right to vote. It was hoped that at the next meeting there would be a number of delegates present who could then make the wishes of the locals known and suggest ways in which more complete co-operation could be satisfactorily arranged. After J. W. Bischoff had presented a motion expressing the regret of the institute in hearing of the unfortunate illness of its former secretary, E. N. Zern, which motion was unanimously adopted, the meeting adjourned.

Federated American Engineering Societies Formally Organized

All-Inclusive Engineering Organization, Embracing National, Local, State and Regional Society Membership, Is Founded to Promote Professional Consciousness and Co-ordination of Effort and to Encourage Participation of Engineers in Public Service

PUBLICITY, class consciousness, co-operation and public service formed the major chord of engineering harmony developed at the organization conference of the national, local, state and regional engineering and allied technical organizations which met in Washigton June 3 and 4. Vigorous discussion and active debate, with numerous differences of opinion prevailed, but in every case majority rule and good sportsmanship for the common cause led to agreements that give promise of general support by the societies represented.

A joint conference committee representing the founder societies—the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society Mechanical Engineers and American Institute of Electrical Engineers—had labored for many months in the formulation of a program of organization which served as a basis of the call for this meeting. In its work this committee was supported by the accredited representatives of about sixty other technical organizations. The initial step in the conference of these representatives was the adoption of a resolution favoring the formation of an organization which should be made up not of individuals but rather of technical societies.

The question which required the most extensive consideration of the conference was whether or not the individual or the society should be the unit of membership. The American Association of Engineers, whose delegates represented a membership of nearly twenty thousand, advocated the individual basis of membership. After the majority's opinion became evident, however, even the American Association of Engineers joined in the adoption of the following resolution:

"That it is the sense of this conference that an organization be created to further the public welfare where technical knowledge and engineering experience are involved and to consider and act upon matters of common concern to the engineering and allied techical professions, and that it is the sense of the conference that the proper organization should be an organization of societies and affiliations and not of individuals."

There seemed clearly to be a realization that two distinct national functions must be served by the engineers collectively: (1) Welfare work, which in all comment should be left to the American Association of Engineers, which is already effectively serving the needs of the individual engineer in this way; and (2) Professional activity, for which it seemed necessary to have a new agency formed. This professional activity was advocated for the development of class consciousness of a professional type among engineers, the co-ordination of engineering effort, the accomplishment of publicity needed on behalf of engineers so that others will recognize this professional position, and most of all, encouragement of the engineer in his participation in public service and the politico-economic life of the nation.

Numerous splendid addresses developed important aspects most forcefully, but space permits only a bare recital of the topics and the speakers who thus contributed to the formal program:

"Functions of the Engineer in Public Affairs," Arthur P. Davis, President, American Society of Civil Engineers; Philip N. Moore, War Minerals Relief Commission, Washington, D. C.; and Leroy K. Sherman, President, American Association of Engineers.

Co-operation of the Engineer in State Affairs—"State Registration of Engineers," Theodore L. Condron, Chairman, Committee on License, Engineering Council, Chicago, Ill. Public Highways.—"Federal-Aid Roads," Thomas H. MacDonald, Chief, Bureau of Roads and Rural Engineering, Washington, D. C.; "Economic Value of Good Roads," William D. Uhler, Chief Engineer, Pennsylvania State Highway Department, Harrisburg, Pa.

"Co-operation of the Engineer and the Business Man in Public Affairs," Homer L. Ferguson, President, Newport News Shipbuilding Co., Newport, News, Va.

"Value of Publicity for the Engineer," James H. McGraw, President, McGraw-Hill Publishing Co.

"The Engineer and National Prosperity," George Otis Smith, Director, U. S. Reclamation Service, Washington, D. C.

"Rendering Service," Frederick H. Newell, Professor of Civil Engineering, University of Illinois, Urbana, Ill.

"Co-operation of the Engineer in Local Affairs."—(a) Need of Local Affiliations; (b) Relations of Local Affiliations to Local Government, Civic, Business and Other Welfare Organizations; (c) Duties of Local Affiliations to National Council. Discussion opened by Marshall O. Leighton, Chairman, National Service Committee, Washington, D. C.

"The Executive in Engineering," Samuel M. Vauclain, President, Baldwin Locomotive Works, Philadelphia, Pa.

"Education of the Engineer for Public Service," Robert S. Woodward, President, Carnegie Institution, Washington, D. C.

"Engineering Research and National Progress," James R. Angell, Chairman, National Research Council, Washington, D. C.

Membership is to be by national, local, state or regional organizations or affiliations, either local or state, made up of any of several sorts of subsidiary bodies. Representatives of these will form the American Engineering Council, from which an executive board of thirty will be selected.

The Engineering Council, whose activities will ultimately be superseded by the new organization, is to serve ad interim to bring into real being the new federation.

Four important resolutions adopted were:

1. Urging payment of adequate salaries for the teachers of engineering in technical institutions.

2. Advocating adequate salary for engineering and other technical services to the Government.

3. Endorsing the bill for the creation of a Department of Public Works.

4. Expressing appreciation of the work of the Engineering Council, especially in making effective and operative the plan of organization; and expressing thanks to the Washington Society of Engineers and the Cosmos Club for their courtesy and assistance during the sessions of the conference.

NEWS FROM THE CAPITOL

BY PAUL WOOTON

Will Urge That Assignment of Cars Is Only Available Alternative

THE Interstate Commerce Commission expects to report immediately on the Harding resolution which amounted to a challenge of the commission's right to use assigned cars for railway fuel. Probably the report will claim authority under the previous Supreme Court decision authorizing assigned cars, with the interpretation that the new law applies only to commercial coal and would be impossible of enforcement with respect to railroad coal, as the only alternative to it would be confiscation, which under the law is even less desirable.

Inquiry Into Profits Must Wait Awhile

A RESOLUTION proposed by Senator Harris of Georgia relative to the publication of excess profits in the coal industry passed the Senate and was referred by the House of Representatives to its Ways and Means Committee. This was practically the last legislative act of the session which closed June 5. This resolution provides that the Secretary of the Treasury furnish from income and excess profits tax returns of 1918 the following information for all corporations which earned in excess of 25 per cent of their capital stock: Invested capital, capital stock, net income, taxes, ratio of tax to income, and other items calculated to bring out in detail any large profits either calculated as percentage of net income or percentage upon invested capital. In view of the fact that the House did not act on this matter, no further developments can result until next session.

We Will Soon Know What Coal Is on Hand

IN COMPLIANCE with the request of the Bituminous Coal Commission that it make an immediate inquiry, the Geological Survey has sent out 5,500 inquiries regarding the present stocks of coal and the probable demand existing for bituminous coal. Replies by June 12 from this representative list are expected to develop facts regarding mine production needs for the balance of the year. The inquiry will cover the stocks of anthracite in dealers' hands.

A resolution was presented by Senator Walsh, and accepted by the Senate, requiring the Interstate Commerce Commission to ascertain the following important items:

"(a) What amount of bituminous coal mined in the Pennsylvania and West Virginia fields during the months of March and April, 1920, was dumped over tidewater piers;

"(b) What is the probable amount of the coal mined in these fields that will be shipped to tidewater in the next six months;

"(c) What percentage of the coal dumped at tidewater during March and April was used for foreign bunkers and export cargo;

"(d) From what ports were these exports made and how much from each;

"(e) What percentage of the coal dumped at tidewater in March and April moved coastwise;

"(f) How many railway cars were used in these months to carry the coal which went offshore for foreign bunkers and cargo;

"(g) To what extent has the price of coal for locomotive use on American railroads been raised due to the upbidding of coal prices by foreign buyers;

"(h) To what extent does the eastern coast section of the United States depend on shipments of bituminous coal by water; and

"(i) What is the total tonnage of bituminous coal shipped by water in normal times to supply the necessary requirements of the Eastern coast sections."

Trade Commission Not to Insist On Reports Unless Maynard Injunction Is Vacated

NELSON B. GASKILL, head of the Federal Trade Commission, has notified J. D. A. Morrow, vice-president of the National Coal Association, that the commission will not serve notices of default in filing coal production cost reports against such of the bituminous coal operators as may choose not to file such reports, nor will it proceed by way of mandamus or otherwise to compel such operators to file these reports, unless and until the injunction order issued by Justice Bailey in the Maynard case shall be vacated.

"The commission regards itself as bound by the Maynard decision only to the extent of the order therein issued," Commissioner Gaskill states, "but it believes that it would be unfair to those who stand on the same footing as the Maynard Company, to institute either penalty or mandamus proceedings against them and compel them to elect between additional litigation and the accumulation of penalties dependent upon the final result in the Maynard case."

The statement was made in response to the suggestion of Mr. Harkness, that such an expression on behalf of the commission would relieve a considerable uncertainty which exists among coal operators.

The commission, Mr. Gaskill said, had the hope that the value of these reports and the bulletins which are based thereon would continue to appeal to a sufficient number of the bituminous coal operators and that without regard to the Maynard decision or this expression of purpose to refrain from penalty or mandamus proceedings, the work might go on, the continuity of reports be unbroken and the body of statistics increase rather than diminish.

Doubts Authority of Commission To Forbid Coal Exports

Chairman Clark Recounts Events That Caused Acute Coal Shortage—Seeks Data That Would Justify Preferential Treatment

CHAIRMAN Clark of the Interstate Commerce Commission is not satisfied that the commission has the power to prohibit exports of coal. This and other very important statements are contained in letters written by Mr. Clark to Senator Lodge and to Senator Kellogg.

In that connection a further blow was dealt the embargo proposition by the refusal of the Committee on Interstate and Foreign Commerce of the House to report out a bill forbidding the exportation of coal.

Senator Lodge wrote Commissioner Clark concern ing the shortage of coal in New England. In his reply Mr. Clark said:

"There is no disputing the fact that the fuel situation in the country is in a deplorable condition and that the necessities of various localities are most acute.

"In prewar days the New England supply of coal moved largely from tidewater ports such as Hampton Roads, Baltimore and Philadelphia by water. The rates were lower that way than they were all rail. During the war the price of water transportation increased so much that the rail-and-water rates became substantially higher than the all-rail rates. A vigorous effort was made to supply New England, with the result that when the armistice was signed there was an unusually large supply on hand in that section. Shipments immediately fell off to almost nothing. Now there is a serious shortage and every reasonable effort is being made to relieve it.

Powers Conferred by Transportation Act

"The Transportation Act confers upon the commission broad powers with regard to service and preferential movement. I confess that I am not entirely satisfied that we have power to prohibit export shipments in order to enlarge the domestic supplies unless it can be fairly based upon a transportation emergency. The export coal is what is commonly called spot coal and purchasers of it are bidding far higher prices than underlie the contracts for domestic coal. If export coal is embargoed the spot coal will move to those places where the highest price can be secured.

"We should be very glad indeed to see New England amply supplied with coal and to see that supply moved by water from the tidewater ports, because there is every reason to desire relief from the badly congested conditions of the railroads.

"Largely as a result of the strike in the bituminous coal mines last winter large quantities of coal were moved from the East to the West out of the normal current of traffic and of trade. When the men resumed work under the agreement to abide by the decision of the Bituminous Coal Commission a great deal of this coal that had been sent west to supply imperative needs and avoid suffering and distress was refused by the consignees because cheaper coal could then be purchased nearer at home. This had the effect of very seriously delaying a large number of cars and the railroads have been struggling with the effort to secure relocation of these cars; in other words to get them sent to the Eastern roads, where they are badly needed for fuel movement and where because of car shortage bituminous mines are producing much less than they would otherwise produce.

"The carriers finally decided that they were unable to effect this movement without the support of a service order by the commission. Several days ago we issued such an order and at the present moment large numbers of empty coal cars are moving from Western roads to Eastern roads, frequently in trainloads, and this movement is to continue from day to day until some 30,000 empty coal cars have been so relocated. This ought to improve the situation. I may mention that in like manner we are relocating some 20,000 empty box cars by sending them from Eastern roads to Western roads.

"It is true that we authorized the use of assigned cars for railroad fuel. This is the policy which obtained under a decision of the commission made some twelve years ago, contested by the railroads and sustained by the Supreme Court, until during the war the Railroad Administration set it aside. It rests upon the fundamental principle and fact which none can deny, that the railroad must have fuel or it can serve no one.

Difficulties Not Underestimated

"I do not underestimate the difficulties of the situation. I am inclined to think that the importance of the volume of movement of export coal is rather exaggerated. Of course, a million tons a month is a large amount when there is an acute shortage but it is only a small percentage of the normal production when the mines are fairly supplied with cars and the miners are at work.

"In addition to the relocation of cars, to which I have referred, we have issued a service order directing the rerouting of freight via open routes when the routes designated in the billing are congested and the freight is unable to move promptly.

"We have organized committees at the more important commercial and railroad centers of the country consisting of an employee of the commission, an official of the railroads and a representative of the shippers. These committees are actively engaged on the ground in doing everything they can do to facilitate the movement of freight and the release of cars, and the situation is being closely and carefully watched under an organization that it prepared to deal from day to day with new conditions or developments.

There is a shortage of equipment due to the fact that during the war period the units of cars acquired did not equal the normal number of retirements. The railroads find it extremely difficult to finance the acquisition of new equipment. We are endeavoring with due regard to business principles to utilize the fund provided for loans to railroads under our certificates in the Transportation Act. We are doing and shall do everything humanly possible to get the highest degree of efficiency out of the available facilities, but under the very best that can be done there will necessarily be inconvenience and a shortage of effective transportation as long as the volume of business offers and until the railroads can get to a more effective basis of operation and secure the construction of additional equipment.

"The switchmen's strike that has been on for a number of weeks has interfered much more with the movement of traffic than the public generally appreciates. Many roads are operating far below normal because of their inability to secure men to perform the switching service. They also are handicapped by inability to get

men in their machine shops and car works to make repairs upon equipment.

"Presumably the Railroad Labor Board will in the not distant future hand down decisions on the wage questions that are before it. If they grant substantial increases in wages it is quite probable that more men will be attracted to the railroad service, but there is another side to that and that is that operating expenses of the railroads will be correspondingly increased and their demand for further increase in rates to compensate them for this increased expenditure will not be very welcome to a considerable part of the shipping public. The general sentiment of the country is, I think, in favor of granting the generally increased rates that are necessary under existing conditions. That is evidenced by thousands of expressions that come to us and by the indications that opposition to the proposal will be voiced in the proceedings now in progress before us by only a limited group or number of shippers."

Senator Kellogg's letter dealt with a similar situation in the Northwest. Chairman Clark's reply to Senator Kellogg in part is as follows:

"We are and for some time have been sensible of the situation and of the importance of getting the largest possible quantity of coal up the Lakes during the season of navigation. We have been and are striving in every way to augment the car supply on the Eastern coal carrying roads. There are, however, some conditions on the railroads which are entirely beyond our control. For example, the Pittsburgh & Lake Erie, one of the heaviest coal carrying and producing railroads in western Pennsylvania, has been functioning intermittently and to a fraction of its normal condition for several weeks on account of labor troubles. The same troubles have operated in a lesser degree upon other of these coal carrying roads and at some of the principal Lake ports.

"Several days ago we issued orders for the immediate return from Western roads to Eastern roads by continuous daily movement of about 30,000 empty coal cars. Yesterday instructions were issued to discontinue the use of open-top coal carrying cars for loading automobiles and other commodities that can be shipped in box of other kinds of cars. We are doing everything possible to increase the facilities for the movement of this coal.

"The fuel situation all over the country is acute. The New England interests are, as you know, pressing with equal vigor for movement of coal to New England. We hope to have a marked improvement in the situation promptly and trust that will continue, but, as I have said, we cannot control the labor difficulties. We have organized committees at the more important railroad and commercial centers throughout the country, each consisting of an employee of the commission, a representative of the shippers and a representative of the carriers, to keep actively in touch with the local situation, keep us fully advised and exert every effort for prompt loading, unloading and movement of cars.

"I was told something with regard to the coal situation at the head of the Lakes which seems disturbing and which ought to be cleared up, that is that while there was a great deal of anxiety about the supply of Lake cargo coal and because the season of navigation is wearing away, the usual dealers or puchasers of this coal have so far refrained in large measure from making contracts or placing orders because of their dissatisfaction with the prices which they could obtain. I am wondering if you can get at the truth of this matter and ascertain which of those dealers or purchasers has placed his contracts and orders, with what producing corporations or operators, from what mines, the roads on which those mines are located, and in what quantities. That information will be of substantial help in further consideration of the request for preferential movement."

Inspectorates of Pennsylvania Bituminous Field Are Redistricted

CHIEF SEWARD E. BUTTON of the Pennsylvania Department of Mines has just completed the redistricting of the bituminous mining region of the State.

Owing to the gradual changes that have taken place in the region, by which certain parts of it show increased mining operations, while other parts show a decline, a redistribution of the mines was necessary to the end that the work of the thirty inspectors might be made more equitable as well as more effective.

The bituminous region of Pennsylvania, comprising about 15,000 square miles, is the greatest coal-mining territory in the United States, producing annually about 160,000,000 net tons with an army of approximately 180,000 employees.

The work of redistricting the region and re-arranging the lines of the thirty districts was quite a task, requiring not only engineering and drafting skill but a thorough knowledge of the region and of mining conditions generally. The capability and versatility of the inspection force are evidenced by the fact that a committee of three, selected from their number, accomplished the task in a manner thoroughly satisfactory to the department. With their intimate knowledge of conditions in the different districts they were enabled to accomplish the work within a week without expense to the state, thus saving the necessity of employing engineers and draftsmen for the purpose.

Lake Coal Shipments Increase, but Are Still Below 1919

ON Saturday, May 1, the Lake season was formally opened. Complete figures given by the Geological Survey show that the dumpings of bituminous coal at Lake Erie ports during April amounted to 329,202 net tons, of which 27,630 tons were vessel fuel and 301,572 were cargo coal. Cumulative dumpings up to May 22 were about 1,159,000 tons, as compared with 4,269,000 tons and 4,945,000 tons for the corresponding periods of 1918 and 1919, respectively.

Dumpings of bituminous coal for the first three weeks of May have been as follows:

Week Ended	Cargo Coal	Vessel Fuel	Total Dumped
May 8	243,190	21,931	265,121
May 15	221,775	33,187	254,962
May 22	278,487	31,618	310,105

The total tonnage for the week of May 22 represented an increase over the preceding week, but was barely one-third of that of the corresponding period of last year.

Dumpings during the first three weeks of May, shown in the following table, were only 37 and 33 per cent respectively of those of the corresponding weeks of 1918 and 1919. Vessel fuel is included.

Week Ended	1918	1919	1920
May 8	723,294	718,366	265,121
May 15	796,727	911,309	254,962
May 22	713,126	906,201	310,105
Totals three weeks	2,233,147	2,535,876	830,188

Cokeburg Shaft, Just Sunk Into Coal, Explodes, Causing Death of Six Men

While Engaged in Constructing Airways and Setting Buntons of a New Shaft in the Ellsworth Field a Violent Explosion of Gas Occurred, Throwing Three Men Out of the Shaft and Hurling a Sheave Wheel 900 Yards

AT TWENTY minutes to nine on the morning of June 2 an explosion occurred in the airshaft of the Ontario Gas Coal Co. near Cokeburg, Pa., causing the death of six men. This mine is on the Pigeon Creek branch of the Monongahela Division of the Pennsylvania R.R.

Officials and owners of the Ontario Co. are all Pittsburgh men, and this operation is one of the latest attempts at further development in the so-called Ellsworth Field. The Ontario Co. owns about one thousand six hundred acres of coal of the Pittsburgh bed, which throughout this section averages 5 ft in thickness. To date activity has been confined solely to constructing the surface buildings and to the sinking of the main hoisting and air shafts. H. K. Knopf, of Pittsburgh, has had charge of both sinking operations, which have been under way since last November.

Six Men Were at Work in the Shaft

About a week before the accident occurred the coal bed was reached in the airshaft at a depth of 430 ft. The shaft measures 14 x 14½ ft. in inside dimensions and is concrete lined, the walls having a thickness of 16 in. A bucket was used for the hoisting and lowering of the men and materials. The men were employed mainly in driving four arched airways which will connect later with the main aircourses that have been planned. Work at the bottom was confined to the primary stage and when the explosion took place none of the headings had been driven more than 15 ft. from the shaft.

On the morning of June 2 three men were working at the bottom and a like number about half way down. These latter were placing buntons for the support of the stairway. Mines in this district are highly gaseous and the men had been frequently warned against carrying into the shaft either open lights or smoking materials. Especially was this impressed upon them after the coal had been exposed. Superintendent E. J. Hackett had personally cautioned Foreman A. H. Sweeney, one of the victims, not to let any of the men at work in the shaft or at its foot take any chances of this nature.

Explosion Broke Windows Three Miles Away

The explosion lasted about half a minute, and its force was sufficient to break windows in houses at Ellsworth, which is located some three miles distant. A 30-in. sheave wheel was torn loose from the temporary headframe at the top of the shaft and hurled for a distance of 900 yd. Upon landing this wheel buried itself in the ground past its axle. All six men in the shaft at the time were killed; the three who were working about half way down were ejected as if from the mouth of a cannon.

The following is a list of the victims:—Alva H. Sweeney, Tom Silak, Ignatz Sulitz, Eli Yonish, Charles Johnson (colored) and Steve Moloryski. Silak, Sulitz and Sweeney leave families. All of the men were from Cokeburg with the exception of Johnson, who made his home in Pittsburgh.

H. Klingensmith, who trained the mine-rescue team that won first place in the national contest at Forbes Field, Pittsburgh, last fall, was one of the first to hear of the accident. He immediately enlisted the services of Mark Jones, captain of the team; N. Moore and H. D. Scott to aid him in removing the bodies from the shaft.

In the afternoon J. T. Ryan of the Mine Safety Appliances Co. of Pittsburgh, arrived. He assumed control of the work and placed several trained men at the disposal of the company. It was late in the evening before the last body had been recovered.

It appears that but one conclusion can be drawn as to the cause of the explosion, namely that a large pocket of gas was liberated from the coal at the bottom. While the coal is but 5 ft. in thickness the men were driving a heading 7 ft. in height. A foot of drawslate overlies the coal and an equal thickness of roof coal occurs above this before a firm sandstone roof is encountered. The men at the bottom had been supplied with air through a line running down the shaft.

Gas Believed To Have Been Liberated

It is believed that much gas had been liberated at the bottom unnoticed by the men there engaged and that the gas in moving up the shaft encountered an open light of some kind held by one of the men placing the buntons.

The bodies of the men recovered from the bottom bore no marks indicating that they had been subjected to the main force of the explosion. All, however, showed evidence of subjection to heat. That the first and most violent explosion probably began about half way up the shaft appears to be the most plausible theory. In such a case the men at the bottom may well have been exposed to much less violence than those in the shaft. They were doubtless either killed by small explosions succeeding the first, in which event they probably met death from flame rather than through concussion, or succumbed to the blackdamp that settled at the bottom.

While the force of the explosion was great, no damage was caused to the buildings on the surface other than the breaking of glass by concussion and some minor damages inflicted upon the power- and boiler-house roofs by falling pieces of timber ejected from the shaft. Around the concrete collar of the shaft some of the effects of the explosive force can be clearly noticed. In many places the concrete wall has been cracked entirely through, and it is apparent that this portion was subjected to the full concussion.

That the gas was ignited from shooting at the bottom does not seem probable. If that had been the cause the bodies of the heading men would have shown to a greater degree than they did the effects of having been in the path of the expanding wave and indeed they might have been thrown out of the shaft altogether as were the bodies of the three men who were nearer the surface.

American Wholesale Coal Association Holds Annual Convention

Maintenance of Prices on a Reasonable Basis Is Keynote of Meeting—Taxes, the Transportation Act, Railroad Rates, Legislation and Wholesaling Are Among the Important Topics Treated—Association Adopts a Platform

WITH more than 80 per cent of the eligible membership represented by registered attendants, the American Wholesale Coal Association held its third annual convention June 1, 2 and 3 in Pittsburgh. Not only was the registration excellent, but deep interest was demonstrated by an attendance estimated at more than three hundred at every session. The success of the meeting was assured, as the program included many matters of vital concern to the dealer.

As a keynote to the convention activities Noah H. Swayne, 2d, president of the association, emphasized the importance of price maintenance upon a reasonable basis. He made clear that any wholesaler who advanced his prices beyond a figure that could be convincingly defended was only subtracting from the uiltimate total income of the industry over extended periods.

The business reports of the session were covered by the secretary-treasurer, Mr. G. H. Merryweather, and the managing director, George H. Cushing. From these reports it was easy to realize the extended activities and the large importance to the coal dealer of the problems which have been handled in the Washington offices of the association. Federal regulation, many details of control of coal, transportation tax on exports, the merchandising margin, port embargoes, assigned cars, prepayment of freight on Canadian shipments, and other equally important topics were given their deserved attention in Mr. Cushing's report.

Smokeless Coal Dependent Upon Car Supply

The problems of smokeless coal supply and exports were covered at length by E. J. McVann, secretary of the Smokeless Association. The whole problem was regarded by this speaker as one of transportation, and emphasis was particularly placed on the low car supply of the Norfolk & Western, between 50 and 60 per cent now being normal, instead of the former 100 per cent car deliveries which operators had come to expect from this railroad.

Tax gathering was entertainingly described and the problem of the tax gatherer effectively set forth by C. B. Hurrey, of the U. S. Internal Revenue Bureau. The speaker described in an interesting manner the large increases in taxation and the greatly aggravated problems in all lines of business and expressed sympathetic appreciation of what he now considers "a controlling factor" in business.

Naturally transportation appealed to the wholesalers as one of the most important factors affecting their business. Discussion of the Transportation Act of 1920 by E. J. McVann therefore commanded considerable interest. As a résumé of this act the association has prepared a circular summarizing the salient features of this legislation as it affects coal. This emphasizes, as was effectively pointed out by Mr. McVann, that the Interstate Commerce Commission now dominates the transportation problems in every aspect, with powers far beyond that realized by those who have not thoroughly studied this act. The speaker therefore urged that even greater attention be given to this important subject than it has thus far received by most coal interests.

To make clear the machinery by which legislation is developed in Washington, a discussion was prepared by Mr. George H. Cushing which elucidated the complicated system of congressional law-making. It was particularly emphasized that Congress rarely, if ever, is really responsible for the legislation; the blame or credit usually should go to the small sub-committees or more frequently to the chairman of the committee handling the legislation before it is reported to the houses of Congress.

Wartime Laws Make Government a Trust

As a review of the present legal situation, Judge Milton C. Elliott, of Washington, addressed the convention on the subject "The Laws Which Control Private Business." Judge Elliott placed special emphasis upon the tremendous scope of governmental activity which was indispensable to the successful prosecution of the war, but which now leaves us in the hands of what may be characterized as the greatest trust which the world has ever known. The address afforded an excellent résumé by one who is thoroughly conversant with our present economic legislative situation.

William B. Colver, chairman of the Federal Trade Commission, addressed the convention on the subject of "Wholesaling." He developed the analogy of ordinary human relationship to the operations of the common carrier, emphasizing that one may justifiably demand from society in proportion to what he contributes. From this theme he outlined the regulation by the Federal Trade Commission which, in his opinion, should most concern the problems of the dealer interests.

Speaking on the subject of "Association" George D. McElvane, secretary of the National Association of Sheet and Tin Plate Manufacturers, dwelt particularly on open competition as affecting price problems.

Tidewater Exchange Activities Described

The problems and activities of the new Tidewater Coal Exchange were described by Chas. A. Owen, who is chairman of the board of directors of this new organization.

The problems of reconsignment, diversion, and other analogous coal regulations were developed by a symposium in which L. W. McClennan, E. J. DuBois, W. R. Coyle, H. H. Morris and others participated. The importance of this subject has also led to the preparation by the managing director of the association of a comprehensive résumé of rules now in force on these subjects. This has been formulated in a pamphlet entitled "Present Diversion and Reconsignment Rules and Charges on Coal" issued under date of June 1 and distributed to the membership at that time. The resolutions on this subject set forth below make clear the stand of the association in these matters.

The membership of the organization in formulation of its resolutions desired to recognize the continuing importance of reconstruction activity and the combined opportunity and obligation of each industry to clearly develop the part which it proposes to take in these matters. Instead of conventional resolutions, it was therefore decided to adopt a comprehensive platform for the guidance of association activities and effort in the coming year. This took the following form:

We, the members of the American Wholesale Coal Association, in order to effect a reconstruction in our country, establish equality of opportunity and obligation, and retain the common heritage of liberty, do publish and declare this platform to be a true expression of certain of our rights, privileges and obligations as coal men and as Americans.

Repeal of War Laws Necessary to Production

"The powers not delegated to the United States by the Constitution nor prohibited by it to the states are reserved to the states respectively or to the people." (Constitution of the U. S. A.)

The waiver of rights in time of war, done for the common good, should not continue after the victory has been won, and the speediest return to a period of ample production and industrial prosperity is gained, not by new restrictive measures, but by the repeal of those laws which by the violation of sound economic principles have served to stifle and restrict rather than to foster and encourage.

We re-affirm and reiterate the position of the Cleveland convention (1919) that this association opposes any legislation tending to return coal to Federal control.

Specifically, it stands opposed to Senate Bill 4,087 (known as the Frelinghuysen Seasonal Rate Bill) and Senate Bill 4,089 (known as the Frelinghuysen Coal Commissioner Bill) and any other measures of similar purport as tending to return coal presently to Federal control.

While conceding to the railways the right to declare embargoes on account of congestion and for the duration of the congestion only, we insist that all embargo notices shall be so drawn as to restrict shipment to the congested district, and not to discriminate unfairly against any of the shippers who habitually use that terminal or district.

"To the efficiency and the permanency of our Union, a Government for the whole is indispensable. No alliances, however strict, between the members can be an adequate substitute." (Washington's Farewell Address.)

We believe this to be true of our nation and also to be true of our industries. We believe that coal can and will find intelligent and coherent expression when three great national associations, each being truly representative of its part of the coal trade, shall, through delegates properly appointed, meet and discuss all matters affecting the good of the industry and the welfare of our country in its relation to the coal industry, and we authorize the proper officer of this association to appoint, at any time, a committee to meet with similar committees from the other associations, for the purpose of advancing the interest of its members and the good of American industry.

Advocates Financial Help for Railroads

It recognizes that the railways need speedily vast sums of money, both as capital and as revenue, if they are to discharge properly their obligation to supply transportation to industry. It recommends that the railways be put in position to maintain a proper margin between operating cost and revenue.

"But let there be no change by usurpation, for though this in one instance may be the instrument of good, it is the customary weapon by which free governments are destroyed. The precedent must always greatly overbalance in permanent benefit any partial or transient benefit which the usage itself can at any time yield." (Washington's Farewell Address.)

It authorizes the Executive Committee, if at any time in its judgment it deems such action necessary, to assume in the name of the association the defense of any of its members who are prosecuted for alleged infringement of regulations, which in the judgment of the Executive Committee and its counsel are improper, invalid and unconstitutional.

This association is opposed to a further continuance of the theory that the right of contract between buyer and seller is subject to approval of and alteration by administrators.

It re-affirms the action of the Cleveland convention (1919) that the coal industry can never be properly profitable until a separate margin is added to the mine price to cover the cost of wholesale merchandising of coal, and paid to whoever earns it.

It endorses the recommendation of its officers that 8 per cent of the quoted basis should, under present industrial conditions, be considered the minimum wholesale merchandising margin.

This association disapproves of the existence of any necessity for the wholesale seizure of private property on the part of common carriers who happen to be custodians of that property. Should necessity for such seizure, in the opinion of the common carrier, arise in the future, the law existing as of January, 1917, is amply sufficient to determine the right and obligation which exists between the owners of the property on one hand and the common carrier on the other hand.

The association instructs its Executive Committee and other officers to use every proper effort to establish firmly the principle that when coal is confiscated by any transportation company it is taken with the merchants' rights attached.

This association approves the theory of a uniform set of rules regarding the presentation of claims and the settlement of claims between the shippers and the common carrier, and in order to open an intelligent discussion on this subject, it calls upon those officers of the Railroad Administration who are custodians of a certain set of rules covering the presentation of these claims, which rules were carefully drawn up by a joint committee of shippers and railroad claim agents, to publish these rules and to send them with the endorsement of the committee to the Interstate Commerce Commission or the proper tribunal for approval and promulgation.

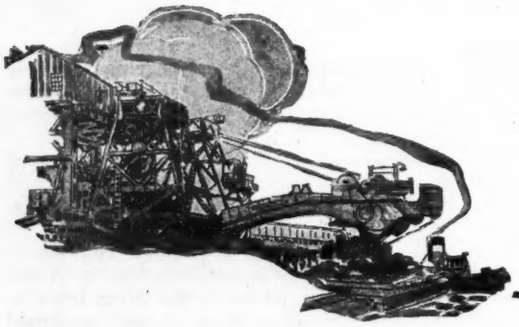
Recognizes Need of Handling Traffic Problems

It takes cognizance of suggestions from several local associations that it should undertake to handle traffic questions of importance which need immediate and vigorous attention.

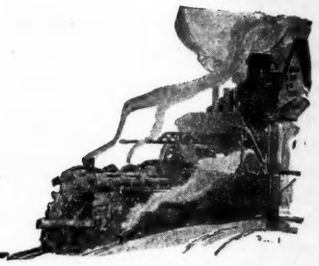
It endorses the recommendation of the Executive Committee that for the immediate future the employees of this association be used to gather all needed information on any national traffic question and that to the Executive Committee be left the employment of such experts as may be necessary to present any formal protest or institute other proceedings.

Having received from its officers a report that owing to the rules and regulations of the Central Coal Committee and the U. S. Railroad Administration, many coal men were in December, 1919, dangerously near to bankruptcy, and having received from the same officers the report that this disaster was prevented largely by the good offices of W. P. G. Harding, Governor of the Federal Reserve Board, who procured payment to coal men of vast sums of money and other relief, it expresses itself profoundly grateful to Mr. Harding and his associates on the Federal Reserve Board and the War Finance Corporation for their disinterested action and timely helpfulness.

For the coming year the following officers will serve the association; President C. L. Couch, Weaver Coal Co., Buffalo, N. Y.; vice-president, Borden Covel, Northern Coal Co., Boston, Mass.; secretary-treasurer (re-elected), G. H. Merryweather, Waubun Coal Co., Chicago. These three officers, with twenty-five others elected to the Board of Directors, will select from their number the Executive Committee of ten to function for the same period.



Production and the Market



Weekly Review

Car Supply Changes Slightly for the Better—Buyers Make Offer Which Demoralizes Market —Anthracite Trade Featureless—Coke Somewhat Better—Demand Rising That Exporting Cease and Coal Be Reserved for American Factories

SLIGHT improvement in the car situation marked last week's business. The car movement is expected to improve slowly, but prophecy is not safe with so many uncertainties ahead. The Baltimore & Ohio Ry. seems the best equipped of any. It is running about 40 per cent of full strength, but the Pennsylvania R.R. is giving the poorest of car service and Pittsburgh & Lake Erie, if anything, less. Business on Lake Erie has made some improvement and much is needed, for fears are becoming quite acute as to what will happen next winter and even earlier if transportation facilities do not improve. Coal is still being commandeered by the railroads.

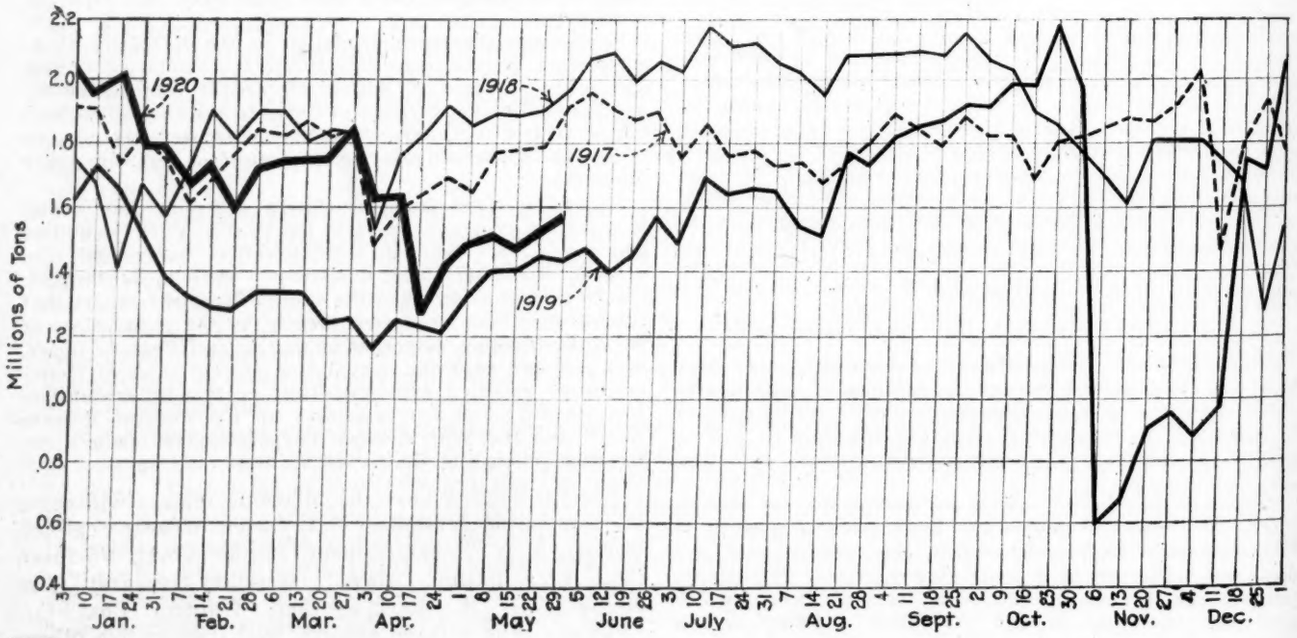
It is usually charged that operators conspire and combine to raise prices. The fact is that whenever prices rise spectacularly it is the buyer who furnishes what advances are made. Last week a firm startled the Pittsburgh market by offering $12.50 f.o.b. for 10,000 tons of coal when spot coal was selling around $8 and $9 per ton and smokeless entering pools 9, 10 and 11 was selling between $9 and $9.25. The effect on prices was distinctly bad. With such offers what chance has the conservative element to keep prices down?

Similarly in the Guyan region an exporting firm has been seeking coal at $9 per ton and it is hard for the producer not to accept what is so strongly urged upon him. There will always tend to be profiteers when there are profit offerers around.

Much feeling exists about the purchase of railroad cars by coal corporations in the southwestern section of West Virginia. It is felt that in a short time, if this is allowed, only millionnaires will be able to operate mines, for without private cars it will be impossible to do business.

Anthracite receipts are, of course, more adequate than bituminous, though in New York the tonnage does not meet with market demands. Philadelphia is better supplied. The coke situation is somewhat cleared and the byproduct ovens are receiving more nearly their requirements. A burning question in New England is whether coal exports shall be forbidden till the United States is supplied.

Average Daily Production of Bituminous Coal*



*From weekly report of Geological Survey

Reports From the Market Centers

New England

BOSTON

No Change Is Noted in Bituminous Situation — Prices Continue Upward Swing — Gateways Are All Open — Trade Discounts Talk of Embargo Against Export—Hampton Roads Dispatch Continues About Normal — Anthracite Is Unchanged.

Bituminous—There are few signs now of any marked change for the better in the steam grades. The pressure to get spot coal continues quite strong and the extent to which railroad seizures continue adds much to the general anxiety. Admittedly, the problem is one of adequate transportation.

Continued light shipments all-rail and a general lack of cars and motive power will throw an increased demand upon the tide-water piers, and it is by no means certain this would have any favorable result.

In every direction there is a buoyant market. In Central Pennsylvania, especially, prices continue their upward swing. The demand is broad enough to take in practically all grades, which share in the most active market seen since August, 1917. In the Fairmont district $9 per net ton has been freely paid for spot shipment.

The Boston & Maine road lifted its embargo on May 29 and for more than a week now all the New England gateways have been open. A somewhat increased tonnage is already in transit.

Much has been said the past week about stopping the export of steam grades. The trade here is not taking any such move with any great seriousness, for it is realized it would not be much more than a quack remedy.

The State of Massachusetts has appropriated $25,000 to re-establish a State Fuel Administration and it is understood that J. J. Storrow will soon take charge. If the same energy could be directed toward curtailing non-essential industries here and elsewhere, it is the judgment of the trade that more good would result.

At Hampton Roads despatch continues about normal. Export prices are still soaring. Those consumers who decided early in the season to take Hampton Roads coals are getting their contract quotas.

Steam grades at wholesale are quoted about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$6.75@$8.25	$7.25@$8.50
F.o.b. Philadelphia, gross tons	9.40@ 10.00	10.00@11.35
F.o.b. New York, gross tons	9.80@10.40	10.40@11.75

Pocahontas and New River are quoted on cars Providence and Boston at from $11@$14.50 per gross ton for inland delivery.

Anthracite—In domestic sizes there is no material change. Barge movement continues with fair regularity, the aggregate tonnage comparing favorably with that of the last two years. Current receipts are somewhat better.

Notwithstanding the advance in the price of steam sizes, the latter continue in good request. There is so much difficulty this season in arranging for supplies of bituminous, that an increasing number of consumers is considering the use of the buckwheats for at least a portion of their supply. Buyers have learned to discriminate between grades, and fresh-mined rice coal is finding a ready market.

Tidewater

NEW YORK

Demand for Anthracite Is Strong—Receipts Are Below Requirements—Bituminous Situation Is Active—Supply of Coal Does Not Meet General Requirements.

Anthracite—There has been no let-up in the demand for coal. Receipts for the week just ended show a slight improvement, but the volume of coal coming to the New York tidewater is still small. The harbor situation continues to be bad.

Production is reported to have recovered slightly. Demand is strong in all sections. Inland dealers between New York tidewater and the mines are said to be well stocked, while embargoes on shipments to New England are in the main removed. The West and Canada are in the market for heavy tonnages.

The market continues to be hazy. Price schedules are tentative and subject to alteration following the award to be made by the anthracite coal commission appointed recently by President Wilson.

Locally the situation is far from normal. Retail dealers are not receiving enough coal to keep all of their equipment busy and are short of stove coal. There is a good demand for the steam coals. Spot quotations at the mine for these sizes range about as follows: Buckwheat, $4.25 to $4.75; rice, $3.25 to $3.50; barley, $1.75 to $2.25.

Current quotations for company coal per gross ton at the mine and f.o.b. tidewater, at the lower ports are as follows:

	Mine	Tidewater
Broken	$5.95–$7.50	$7.80–$9.35
Egg	6.35– 7.35	8.20– 9.20
Stove	6.60– 7.70	8.45– 9.55
Chestnut	6.70– 7.70	8.55– 9.55
Pea	5.30– 5.75	7.05– 7.50
Buckwheat	3.40– 4.10	5.15– 5.85
Rice	2.75– 3.25	4.50– 5.00
Barley	2.25– 2.50	4.00– 4.25
Boiler	2.50	4.25

Bituminous—Little improvement if any can be noted in the situation. Receipts are far below the requirements necessary to meet the demand, causing quotations to go higher. Car supply appears to be the stumbling block to larger production.

There is no great amount of coal at the local docks. Demand is strong at inland points and shippers are placing their tonnages there instead of sending them to tidewater to be held up because of labor troubles.

While there is considerable talk of $8 coal here, the major part of the spot buying is being done around $7.50. The larger portion of production is moving on contract and manufacturers are getting enough coal for their temporary needs.

Quotations heard on spot business at the mines ranged about as follows per net ton: Pools 1, 9 and 71, $8 to $8.25. No. 11, $7.25 to $7.50; No. 18, $7 to $7.25; and Pool 34, $8 to $8.25. Fairmont gas coal was quoted around $8 at the mines. Loaded boats were quoted at from $12.25 to $13.25 alongside within the harbor limits.

Local houses shipping from Southern ports were quoting Pools 1 and 2, (New River and Pocahontas coals) at from $8.50 to $8.75; and Pools 5, 6 and 7, (high-volatile gas, steam and byproduct coals) at from $8 to $8.50.

PHILADELPHIA

Anthracite Prices Increase 10c. for June—Fair Tonnage Coming In—Domestic Demand Continues—Chief Call Is for Stove — Steam Trade Is Quite Active, with Barley Only Slow Size—Bituminous Is Scarcer Than Ever, and Prices Soaring, Even on Slow Buying.

Anthracite—The biggest shipper recently advised the trade of an advance of 10c. a ton on egg, stove, nut and pea. All other sizes were allowed to stand at the previous figures. Soon most of the other producers followed the lead of the big company, a few even putting on more than 10c. The following table notes the comparison between company individual average prices on domestic sizes:

	Egg	Stove	Nut	Pea
Company	$7.30	$7.55	$7.65	$5.85
Individual	8.35	8.60	8.60	6.50

All the shippers continue to notify their trade that the prices as given are subject to withdrawal at any time without notice.

The consumer demand continues unabated and the dealers are receiving a fairly good volume of coal.

On some sizes there is a tendency toward a slight accumulation. This is particularly true of egg and pea coal. Stove coal is in greatest demand which complicates deliveries.

The steam-coal trade is extremely active, especially since the prices of soft coal continue to trend upward. The company price on buckwheat is still $4.10 and contracts are being made at this figure. The independent shippers have no difficulty in getting 25c above that price.

Rice coal is in good call and even barley is strengthening, but has not yet reached the point where it is being

taken without an effort on the part of the shippers to move it.

The company prices per gross ton f.o.b. cars mines for line trade and f.o.b. Port Richmond for tide delivery are as follows:

	Line	Tide
Broken	$7.50	$9.35
Egg	7.30	9.45
Stove	7.55	9.40
Nut	7.65	9.50
Pea	5.85	7.45
Buckwheat	4.10	5.15
Rice	3.00	3.90
Boiler	2.50	3.50
Barley	2.25	3.15
Culm	1.50	2.40

Bituminous—Another upward movement is evident in the soft-coal market for spot coal. Recent quotations on steam coal from Pools 10 and 11 have been around $8.75, with no coal offering whatever from Pool 9. Even at the prices quoted the houses were not soliciting business. Gas coals are still higher in price, with most offerings close to $9. Despite these high prices the local demand for coal is not particularly heavy, as the consumers seem to be playing a waiting game.

The textile industry in this district is slowing down which lessens the demand for coal. The strongest call comes from outside territories and sales at even higher figures than those quoted are reported.

It is reported that the large consumers are considering a plan of a general closing down until the coal situation improves. Producers state that the car supply runs from 15 to 20 per cent of their assigned capacity. There is a heavy accumulation of coal at tide, with much delay in loading cargoes on account of labor troubles. A heavy tonnage is being contracted for export.

BALTIMORE

A Feverish Market Marks Soft-Coal Trade — Prices Are Around $9 at Mines — Local Business on Lower Schedule at Times — Hard-Coal Men Resigned, but Consumers Are Restive.

Bituminous—One of the most feverish markets in the history of the soft-coal trade is noted here. At this writing few if any coals can be obtained, either steam of gas, below $8 for lowest grades, while the best coals are gobbled up in most cases around $9 and over f.o.b. mines the net ton.

It is said that as high as $10 a ton at the mines has been paid for coal to make up a ship cargo. With at times close to 40 ships astream here waiting cargoes of coal, some of them under demurrage running into hundreds of dollars a day for weeks at a time, there is small wonder that efforts are being made to get coal aboard at any price.

Local coal men and the railroads entering here are endeavoring to take care of the immediate needs of local plants, and considerable coal has been released at prices far below the reigning market quotations. On the other hand some consumers here have had to pay fancy prices when caught short. In such a market it is almost impossible tc set a genuine selling price.

Car supply has improved somewhat, the Baltimore & Ohio reporting a movement generally over 50 per cent and the daily number of cars loaded has jumped over the 3,000 mark on that system. The pier dumping for all the railroads has gone up heavily too, some 800 or more cars being dumped daily at tide, and the general pool handling is more satisfactory.

The official figures for May show a total export coal loading here of 523,251 tons, of which 466,784 tons was cargo and the balance bunker coal.

Anthracite—The appointment of an anthracite commission in Washington merely means to the local hard-coal man that he has a considerable period of waiting ahead before he can do business on anything like an assured basis. Meanwhile he is urging his supply connections to sell as much coal as possible under the schedules now in vogue.

Consumers are urging deliveries and having no assurance as the the price they must pay when delivery is made, they are restive. Receipts here continue comparatively light.

ANTHRACITE PRICES

The following quotations are from a number of prominent anthracite producers for the month of May at the mines:

	Egg	Stove	Chestnut	Pea
Philadelphia & Reading Coal & Iron Co*	$7.20	$7.45	$7.55	$5.75
Lehigh Coal & Navigation Co.	7.35	7.70	7.70	6.00
Whitney & Kemmerer	8.25	8.50	8.50	6.50
Markle & Co. (Jeddo)	8.35	8.70	8.70	6.80
Markle & Co. (Highland)	8.55	8.80	8.80	6.90
Pardee & Co. (Lattimer)	8.25	8.50	8.50	6.50
M. A. Hanna & Co.	8.10	8.45	8.45	6.30
Madeira, Hill & Co.	8.10	8.45	8.45	6.50
Wentz Co.	8.10	8.45	8.45	6.50
Lineaweaver & Co.	8.35	8.60	8.60	6.25
Weston, Dodson & Co.	8.50	8.50	8.50	6.50

*Prices of The P. & R. C. & I. Co. date from May 11. Prior to that date shipments were billed at former winter circular or 85c. less for egg, stove and nut, and $5.50 for pea..

It will be noticed that the variation runs up to as much as $1.35 on egg. Also with the exception of the Philadelphia & Reading the prices for stove and nut are on a parity. The Reading still maintains a difference of 10c a ton between the two sizes.

It should also be remembered that the above figures are for the gross ton of 2,240 lb. at the mines, although the bulk of the tonnage is sold at retail on the net ton basis of 2,000 pound.

Even in Pennsylvania, where the gross ton is established by legislative enactment, the dealers in many communities retail the coal on the 2,000-lb. basis. In Philadelphia and the surrounding territory for a radius of about 60 miles, coal is billed as so much per ton.

In regard to Pocahontas and New River coal at Hampton Roads, the situation continues remarkably even. Movement is good and enough coal is available at all times to keep the piers busy. Despatch continues normal, few steamers coastwise being detained more than one or two days.

Clearances for New England are still light, the great volume of Hampton Roads coal being moved elsewhere. Only relatively small tonnages are being sold at spot prices, most of these sales being made to piece out cargoes.

At Providence and Boston the regular agencies are charging their trade, even for spot coal, only the contract base price plus the actual charges. The result is a price around $11 on cars, under the conditions quite a moderate figure.

Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F.o.b. mines, net tons	$5.25@$6.25	$6.25@$7.00
F.o.b. Philadelphia, gross tons	7.75@ 8.90	8.90@ 9.75
F.o.b. New York	8.10@ 9.25	9.25@10.00

Pocahontas and New River are quoted at $7.50@$9 for spot loading, Norfolk and Newport News, Va.

Lake

BUFFALO

Slight Improvement Shown in Bituminous Trade—Fancy Prices Still Hold—Anthracite Movement Is Much Better—Lake Trade Is Active.

Bituminous—The trade does not improve much, though the slightly better movement is much appreciated. It is easy for certain mines to ask enormous prices for their coal. There is no longer any quotable price, for it is just what the consumer can be made to pay. A good many are getting contract coal on the basis of about $3.50 at the mines, some of the larger mining companies being practically tied up to such prices; but the consumer who has no reliable contract and must buy coal on single orders must sometimes pay for it as high as $8 at the mines.

Anthracite—The anthracite movement is much better. Not only is the movement by Lake good, but probably more coal is distributed through the city than usual at this time of the year. The switchmen's strike seems to be mostly a matter of history. The yards are active and trains move, not as freely as they should, but so that business can be done.

Anthracite prices have not settled down to an exact uniformity, but the differences are small, amounting to 15c. or so retail. One leading company gives out the following retail prices: Grate and egg, $11.75; stove and chestnut, $12; pea, $10.40; buckwheat, $9, at the curb, per net ton.

The Lake trade is active, with all shipping agents eager to hurry the coal forward. A late start makes the total look small, the amount to June being 461,121 net tons to 793,202 at the same time last season. May, 1920, ran ahead of the previous May, the amount being 382,500 tons to 370,776 tons in May, 1919.

For the week the shipments were 110,600 tons, of which 42,400 cleared for Duluth and Superior, 28,200 tons for Milwaukee, 27,100 tons for Chicago, 2,900 tons for Green Bay and 1,000 tons for Sheboygan. Freight rates are unofficially 65c. to 70c. to Chicago, 60c. to

Milwaukee, Green Bay, and 55c. to Sheboygan.

Coke—The coke trade is following coal in wild prices, though but little is handled outside of the contracts. Prices asked are on the basis of $20 at the ovens, for either foundry or furnace, the Buffalo freight being $2.60, all per net ton.

CLEVELAND

Transportation and Conditions at Mines Are Slowly Improving—Lake Shipping Pool Is Being Formed to Prevent Distress in the Northwest.

Bituminous—Gradually improving labor conditions on some of the railroads are being reflected in somewhat better mine operations and shipments.

Operations in the No. 8 district continue at between 40 and 45 per cent of normal. Operators report that only scant lots of spot coal are available, for which unheard-of prices are being obtained.

Operators are concentrating upon supplying their contract customers and the Lake trade, but deliveries are far behind. An embargo on all but train loads is still in force on the Baltimore & Ohio, and this situation, due to labor troubles, is helping keep down operations in the No. 8 district.

Pocahontas and Anthracite—The supply of Pocahontas is estimated at about 10 per cent of demand. New orders are being taken subject to ability to get coal. Recently the shipments to dealers have been confiscated in part by the railroads. Anthracite receipts show a slight improvement, but prices remain firm.

Lake Trade—Figures compiled by the Ore & Coal Exchange show that the total of coal loaded at docks for the Northwest to June 1 was 1,639,607 tons, as compared with 4,934,040 tons for the same period one year ago. Plans for effecting a shipping pool arrangement are being speedily rushed to completion. This is considered necessary in order to prevent acute distress in the Northwest. The pooling arrangement is considered to be the only possible hope for a bad situation.

In 1918, when the pool was in effect, less than 8,000 cars daily were required to handle the same amount of coal at the docks as was handled in 1919, when from 14,000 to 15,000 cars were in use. Coal is now coming forward to the docks a little more freely. The supply of bunker coal is short of the demand.

Retail prices of coal per net ton delivered in Cleveland are as follows:

Anthracite — egg, $13.20; grate, $13.20 and $13.50; chestnut and stove, $13.50.

Pocahontas—Shoveled lump, $11.75; and mine-run, $9.25.

Domestic bituminous—West Virginia, splint, $9.50; No. 8 Pittsburgh, $8.75; Millfield, lump, $9.50; and cannel lump, $11.50.

Steam coal—No. 6 and No. 8 slack, $8.25; No. 6 and No. 8 mine-run, $8.25; and No. 8 3-in. lump, $8.25 to $8.50.

Inland West

CINCINNATI

Fuel Situation Improves But Little—Prices Continue Firm with Domestic Demand Good — Ohio River Furnishes Best Transportation.

Little improvement in the local fuel situation was noted during the past week. The car supply to the mines continues low but with enough betterment to give hopes to the coal man that a decided improvement is not far off.

Prices continue firm both in the wholesale and retail ends of the trade. Many domestic consumers wait until they can get smokeless coal, but the small industrial user is buying where and what he can get at retail prices.

A good deal of business is being done with buyers from the Lake and Canadian districts who are eager for the best grades of gas coal and in some instances it is reported they have paid as high as $7.25 a ton for anywhere near immediate delivery.

It was generally supposed that with the first of June there was to have been an increase in the price of coal from the retailer, but the change did not occur. The demand from the householder continues good, many orders being taken for delivery during June and July.

It is next to impossible to gage the prices for coal at the mines. The range of prices varies greatly. In some cases as high as $7.25 for best grades is being paid at the mines for spot cars.

The retailers are being favored with continued shipments down the Ohio which highway is still furnishing the one best transport for the local trade.

Retail prices are as follows:

Bituminous lump delivered	$8.00@$8.25
Bituminous nut delivered	$6.00 to 7.50
Bituminous run-of-mine delivered	$7.25
Smokeless lump delivered	$9.25
Smokeless run-of-mine delivered	$8.50
Anthracite delivered	$14.00

COLUMBUS

Reduced Car Supply and Embargoes Hold Up Production—Industrials and Utilities Are Hard Pressed for Fuel—Domestic Trade Is in Bad Shape—Prices Are Advancing.

The Ohio coal trade shows little change from the previous week as far as production is concerned. Reduced car supply and embargoes are holding up both production and shipments, and commercial users are suffering as a consequence. Available tonnage is quickly snatched up and purchasing agents from large users are scouring the country for fuel. Little hope of improvement in the car supply is held out, although it is promised that a better run of cars will be had during July.

Manufacturing concerns in northern Ohio and in Michigan are on short fuel rations and in some cases the plants are on part time. Public service concerns are operating from hand to mouth. State institutions and hospitals are fairly well supplied. But on the whole the steam trade is in a strenuous condition and many industries are on the point of being suspended.

Domestic trade is also in bad shape. Retail stocks are so light and dealers are now booking orders for delivery when the coal is available and at the prices prevailing at that time. Retail prices are increasing as the price at the mines advances.

The usual margin now taken by dealers, over and above the cost at the mine and freight charges, is $2.25 per ton. Pocahontas is quite scarce and little is coming into the Columbus market. Other West Virginian grades are more plentiful although the tonnage is not large. Hocking, Pomeroy and Jackson grades constitute the large part of the coal for domestic purposes.

In general production in Ohio fields is said to be about 45 per cent of normal. For the various fields production is as follows: Eastern Ohio, 42½ per cent; Hocking Valley and Pomeroy Bend, 45 per cent; Jackson, 40 per cent; Cambridge, 35 per cent; Crooksville, 50 per cent.

Prices at the mines of the principal coals used in Ohio are:

Hocking lump	$5.00 to $5.75
Hocking mine-run	5.00 to 5.75
Hocking screenings	4.75 to 5.50
Pomeroy lump	5.25 to 6.25
Pomeroy mine-run	5.00 to 6.00
Pomeroy screenings	5.00 to 5.75
West Virginia splints lump	5.25 to 6.25
West Virginia mine-run	5.00 to 6.00
West Virginia screenings	4.75 to 5.75
Pocahontas lump	6.50 to 7.50
Pocahontas mine-run	6.25 to 7.25
Pocahontas screenings	6.00 to 7.00

MILWAUKEE

Improved Rail Conditions Serve To Make the Coal Situation Somewhat Easier — Anthracite Receipts by Lake Are More Liberal Than Those of Soft Coal—Prices Hold Steady.

The coal situation at Milwaukee has become somewhat easier, due to a better movement by rail, and dealers now talk more hopefully of being able to meet future demands. The supply of anthracite by Lake is more satisfactory than that of soft coal and many consumers are taking advantage of the opportunity to put in their supplies for next winter.

There has been no opportunity thus far to accumulate either hard or soft coal in the yards, as the outward movement keeps about an even pace with receipts. Small dealers are accorded coal quite sparingly and it is difficult for them to meet their orders. The spring price schedule is adhered to, despite the temptation to take advantage of the situation and give prices a lift.

During April and May last year the various dock yards received 162,033 tons of hard coal and 644,010 tons of soft coal by Lake. This year the record of receipts by Lake for the two months show 127,100 tons of anthracite and 154,962 tons of soft coal. The combined loss of coal tonnage for the two months, as against last year, is 523,981 tons.

ST. LOUIS

Conditions Show Improvement, but Car Supply Is Short and Tonnage in Demand — High Prices Prevail — Labor Troubles in All Fields.

This week shows considerable improvement in the matter of transportation, especially in the St. Louis terminals, although conditions are not yet normal.

A few embargoes are still on. Car supply is about 35 per cent, excepting for mines that run on railroad coal and the railroad demand for coal is heavy in all fields, with its usual abuses. The mines that do not load railroad coal do not get many cars and in time lose their organization.

In the Standard field commercial mines get about one and a half to two days a week. The prices in this district are as high as $5 for lump, egg, and screenings, and $4.50 for mine-run. Some of the regular operators hold their prices down to about $3,50@$4.

In the Mt. Olive field conditions are somewhat similar, with the exception that the prices are from about $3@$3.50. The railroad tonnage from both of these fields is heavy.

In the Carterville field mines are idle excepting where railroad coal is being loaded, especially on the Missouri Pacific. Other roads show fairer treatment for commercial loading.

The mine prices in this field are close to about $3.75 for domestic sizes. Here and there some operator disregards contracts and orders and sells on the open market, especially in the Duquoin field, at whatever it will bring.

In St. Louis proper the domestic demand is easy, while the steam requirement exceeds the supply. This condition prevails throughout the country districts, excepting that domestic call is quite good, especially on Carterville, which is not available.

Very little anthracite is coming in and something like 20 cars of smokeless in the past week, with no Arkansas. The coke supply is exhausted here, excepting a little byproduct. There is no change in retail prices.

DETROIT

Movement of Coal Into Detroit Is Curtailed by Deficiency of Transportation — Industrial Plants Are on Quite Short Supply—Soft-Coal Supply Comes from Ohio — Anthracite Situation Is Not Improved.

Bituminous—While the railroads report that coal is coming into Detroit rather more freely, local jobbers and wholesalers are still finding it difficult to provide stock for their customers. The steam-coal situation is apparently somewhat easier than a few weeks ago, though the shortage of transportation facilities continues to prevent movement of anything like a normal volume of shipments into the local market.

Users of steam coal, in most instances, have little more than three or four days' supply ahead, while many of the industrial plants are practically dependent on a hand-to-mouth supply.

Jobbers say there is scarcely any free coal to be found on terminal tracks in and around Detroit. Nearly the entire supply now available is coming from mines in Ohio with a small amount from Illinois and Indiana.

The Ohio coal is quoted at the mines on a short-ton basis at about $5 to $5.25 for lump; $4.75 to $5 for mine-run and about $4.75 for slack. With the present condition of car supply, many of the sizes that formerly found favor with various local consumers are not being produced at the mines, the operators being content to load available cars with mine-run.

Anthracite—No improvement is apparent in the supply of anthracite, delivery of the stock in Detroit being long deferred and uncertain. Meantime orders are accumulating on the books of the retailers and household consumers are complaining at their inability to obtain coal ordered for delivery in April and May. Uncertainty concerning prices adds to the unsatisfactory aspect of the situation.

Lake Trade—Coal for movement to the northwest is arriving at Lake loading docks in somewhat larger quantity, though the supply is still restricted by shortage of railroad facilities. Many of the carriers are obliged to make the upbound trip for ore, without cargo and in numerous instances considerable difficulty has been experienced in getting coal enough to fuel the ships.

South

LOUISVILLE

Market Advances Steadily, with Gas and Domestic Fuel in Strong Demand—Car Supply Improves Little—Local Domestic Stocking Is Light.

Prices continue advancing steadily at the Kentucky mines, with Western Kentucky showing an especially strong market on account of heavy buying from the Chicago, and Northwestern district. Gas coal from Eastern Kentucky is in quite strong demand, and production is far short of requirements..

Production of block coal continues light in view of the strong market that has been experienced for mine-run gas coals. Other than gas coals are meeting with a strong demand in domestic sizes, although non-gas steam coal is not quite so actively sought after as other grades.

Retailers report that business is practically at a standstill as the public is not stocking on the present market, and is waiting for steam and gas stocks to be filled, and for a production increase to force lower prices.

There has been little improvement in car supply, although transportation for May has been slightly over 40 per cent, which is better than conditions in April.

All Eastern Kentucky lump coal is now quoted at around $7.50 to $8 a ton, while mine-run gas coal is quoted at $8, some being bought at around $7.75. Screenings from gas coal are quoted at around $7.25. Non-gas coal from the same district is quoted at $7.50@$8; mine-run, $7@$7.25 and screenings, $5.50@$6. Western Kentucky lump is selling at $5.25@$5.50 at mine; mine-run, $5@$5.25; screenings, $4.25@$4.50.

BIRMINGHAM

Car Supply Is Poorer Than for Previous Week—Some Public Utilities Face Shutdown—Little Spot Coal Is Obtainable.

The activity of the trade in the Birmingham section is regulated entirely by the supply of cars available for the mines; the percentage of equipment furnished the past week has been lower than for the previous period.

The Louisville & Nashville furnished from 33⅓ to 40 per cent of the equipment needed, the Southern Ry. about 50 per cent and the Frisco road approximately 75 per cent. This condition disrupted working schedules at the mines and seriously affected production.

Very little fuel is to be had in the spot market. Inquiries from abroad continue to be received for heavy requirements. Considerable bunkerage coal is moving by rail and water to Pensacola, Mobile and New Orleans. Quotations on mine-run coal are as follows per net ton f.o.b. mines:

Black Creek	$4.00@4.50
Cahaba	4.00@4.50
Big Seam	2.95@3.50
Nickel Plate	3.35@3.50
Carbon Hill	3.50@4.00

Domestic prices are as follows, f.o.b. mines for lump sizes:

Big Seam	3.50@3.75
Cahaba	4.70@6.00
Black Creek	4.70@5.00
Carbon Hill	3.70@3.95
Montevallo	7.30
Corona	5.65

West

SAN FRANCISCO

Many Steamships Bunkered Here—Coal and Bunkering Facilities Satisfactory.

Steamships coming here in good numbers are bunkered by the King Coal Co. with fuel shipped from Utah. Some of the vessels are from the Atlantic, some from South American ports, and others from the Orient. These steamships are in addition to the cargo carriers that steam from this port to every part of the globe.

The big craft come here for fuel on account of the satisfactory quality of the coal, and state that no other variety of fuel is obtainable here which is as high in heat units as the Utah product; also by reason of the expeditious manner in which they are bunkered. In other years the vessels either called at Honolulu or used up valuable space in carrying extra coal.

The bituminous prices, f.o.b., mines, wholesale, Utah and Wyoming, per net ton, are as follows: Stove and lump, $4. The bunker price is $13.55.

News From the Coal Fields

Northern Appalachian

FAIRMONT

Poor Production Is Due to Dearth of Cars and Absence of Men from the Mines — Output One-Third of Capacity—Tidewater Is Embargoed Again—P. & L. E. Begins To Move Coal.

Production was as poor in the Fairmont and other northern West Virginia fields during the final working period of May as it had been at any time during the entire month, a dearth of cars being the principal factor in curtailing production. On Tuesday, May 25, many miners absented themselves from the mines in order to be at the polls so that comparatively little coal was produced.

For the first few days of the week, there was a better run of cars on the Monongahela R.R. than usual, but toward the end of the week the supply dwindled to quite material extent. The number of mines idle on the Monongah division of the Baltimore & Ohio during the last three days of the week averaged about 100 or more per day. Taking the week as a whole, northern West Virginia mines were not receiving more than enough cars to enable them to work more than 35 per cent of potential capacity.

Curtis Bay was under its periodical embargo again so that tidewater shipments were more or less limited; the embargo resulting from heavy shipments to tidewater during the week ended May 22.

Despite the tidewater embargo most northern West Virginia coal was being shipped to eastern markets, Lake shipments showing no material increase in volume over previous weeks.

It was possible to ship more cars over the Monongahela road in the last week of May than during the previous week, owing to the fact that the Pittsburgh & Lake Erie had begun to move coal from Brownsville for the first time in a month and a half.

Between privately owned cars and assigned cars, mines in northern West Virginia found it impossible to ship much commercial fuel during the last week of the month, the railroads securing the bulk of production for their own use.

PITTSBURGH

Better Car Supplies Are Promised—Spot Market Offerings Are Light.

According to estimates made in Pittsburgh coal circles, compliance with last week's instructions of the Car Service Commission to the railroads, in the matter of furnishing coal cars, would result in an increase of at least one-third in the number of cars furnished the mines in this district. Car supplies had been running at about 37 per cent of full quotas, while the order calls for priority up to 50 per cent.; cars beyond that amount were to be furnished to other industries up to 50 per cent., any surplus that might then be left being applicable to coal.

Pittsburgh coal operators were somewhat irritated by some of the statements made at last week's convention here of the American Wholesale Coal Association, particularly the statement that since coal is being produced in the United States at the rate of 9,500,000 tons weekly and the current requirements are 8,000,000 tons then there is a surplus of production. The correctness of both figures is denied, while it is pointed out that coal is largely a local matter; coal may be extremely scarce in the Pittsburgh district, while it may be plentiful at some Southern or Western points.

It is plain that quite small quantities of coal are being offered in the Pittsburgh market, with buyers, both on the part of industries and exporters, ready to pay more than $7 to get coal. If the limited offerings are due to producers shipping large tonnages on contracts, then the operators involved cannot be blamed, as the contract shipments realize very much less than the spot market. Market prices for spot shipment range within the limits of $7 and $8 per net ton at mine, Pittsburgh district, for mine-run.

CONNELLSVILLE

Car Supplies Improve Slowly — Coke Reaches Furnaces and Coal Is Supplied to Byproduct Ovens—Negotiations Are Beginning on Furnace—Coke Contracts.

Car supplies in the Connellsville region have continued to increase, though at a decidedly slow rate. In the delivery of coke there is a greater improvement, as much coke that has been stalled en route for a long time is now reaching the blast furnaces.

While this clearing of the tracks represents in itself only a temporary gain to the furnaces, it of course releases cars which, if returned promptly to the region, will increase the supplies further. The Pennsylvania and Baltimore & Ohio are now functioning almost normal, as regards the Connellsville region, while the Pittsburgh & Lake Erie is doing better, particularly in the movement of solid train loads.

There has been a distinct improvement in supplies of coal to the byproduct ovens, particularly those in the Mahoning and Shenango valleys, and the increase in byproduct coke manufacture in the past three or four weeks is probably greater than the increase in the Connellsville region.

Taking the blast furnaces of the country as a whole, they are now operating at the rate of about 37,000,000 gross tons of pig iron a year, against a 40,000,000-ton rate in March and a rate of less than 30,000,000 tons when the rail strike was as its worst.

Offerings of Connellsville coke for spot shipment continue quite light, so light that former prices are easily maintained even though many consumers prefer to do without rather than pay such prices. The market is quotable at $15 spot furnace and $16 for spot foundry coke.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
May 15b	8,764,000	193,111,000	8,436,000	158,415,000
Daily average	1,461,000	1,660,000	1,406,000	1,362,000
May 22b	9,252,000	202,363,000	8,724,000	167,139,000
Daily average	1,542,000	1,655,000	1,454,000	1,367,000
May 29c	9,425,000	211,789,000	7,938,000d	175,077,000
Daily average	1,571,000	1,651,000	1,498,000	1,365,000

ANTHRACITE

	1920 Week	1920 Calendar Year to Date	1919 (a) Week	1919 (a) Calendar Year to Date
May 15	1,726,000	31,256,000	1,751,000	28,678,000
May 22	1,797,000	33,053,000	1,673,000	30,351,000
May 29	1,830,000	34,883,000	1,298,000	31,649,000

BEEHIVE COKE

United States Total

Week Ended May 29 1920c	Week Ended May 22 1920b	Week Ended May 31 1919	1920 to Date	1919 to Date a
428,000	415,000	256,000	8,937,000	8,382,000

a Less than one day's production during New Year's week to equalize number of days covered for the two years. *b* Revised from last report. *c* Subject to revision.

(All figures in net tons.)

Negotiations on furnace-coke contracts for the second half of the year are being resumed, but in very reserved manner, neither bids nor offers having yet been made. It is a question whether most of the business will be done at flat prices or on a ratio basis, relative to the current price of basic pig iron at valley furnaces. Some operators have intimated that they might be willing to do business on a 4-to-1 basis, which would make nearly $11 for coke at the present quotation of $43.50 for pig iron. Some other operators, having in mind the possibility of a decline in pig iron, would prefer to close at a flat price of $10. In foundry coke there is a little inquiry on contract, but not much.

The market is quotable at $15 for spot furnace, $16 for spot foundry and $11@$12 for contract foundry, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended May 22 at 185,728 tons, an increase of 7,478 tons. Before the rail strike production was running at about 245,000 tons weekly.

Middle Appalachian

POCAHONTAS AND TUG RIVER

Better Car Supply from the West Permits Larger Production at N. & W. Mines—Increased Shipments Go to the Lakes and West—Congestion Continues at Tide.

An impetus was given to production in the smokeless fields of southern West Virginia on the Norfolk & Western at the end of May by virtue of a somewhat better car supply, the improvement being due to a larger run of cars from Western territory. Because of the larger number of cars from the West, it was not necessary to use empties returned from tidewater and other eastern terminals for all the fields on the Norfolk & Western. The western supply was used largely for Tug River territory.

While tidewater terminals were securing by far the larger part of the smokeless product originating on the N. & W., yet there was a growing volume of smokeless moving westward. A part of the west-bound shipments was destined for Lake dumping.

Improvement from a production standpoint was more noticeable in the Tug River field, in the week ended May 29, than in the neighboring Pocahontas field, chiefly because of the increased number of cars from the West, Tug River mines usually depending on the western supply.

While there was greater regularity in work at the mines, still Tug River plants were not producing more than 50 per cent of potential capacity. However, with larger loadings it was possible to increase western shipments and especially Lake consignments, without in any way decreasing tidewater and Inland East shipments. Prices at tidewater markets remained about on the same level.

Production losses far outstripped the output of the Pocahontas field at the end of May and conditions were not as satisfactory as they might have been. Production was much below 50 per cent. There was coked in the Pocahontas field 11,863 tons of coal.

A return to normal conditions at some of the western points of interchange was reflected in an increased western movement of Pocahontas coal. Continued congestion at tidewater impeded to some extent the return of equipment from the seaboard.

LOGAN AND THACKER

Transportation Situation Is Serious in the Logan Field—Logan Coal Will Go West When Cars Are Returned from That Section—Thacker Mines Are Shut Down by Labor Agitation.

No headway was made by the mines of the Logan field in increasing the amount of coal mined during the final working period of May, production still being under 140,000 tons. The situation in the Logan field was serious from a transportation standpoint, the limited supply of cars from the West being a large factor in reducing production here. It was believed however that the first week of June might bring some relief in the way of more coal cars delivered to eastern lines.

No relief during the latter part of May had been obtained from the efforts of the Interstate Commerce Commission. Little increase in production may be looked for until more Western cars are received; nor is it likely that there will be much Logan coal shipped west ward until there is some assurance that cars will be returned for re-loading. On the other hand Lake shipments from the field did appear to be on the increase.

Virtually the entire output of the Guyan mines found its way to tidewater during the entire month of May, partly because of transportation conditions described and partly because of higher prices prevailing at the seaboard.

Between a car shortage and labor agitation in the Thacker field in the last week of May, there was a heavy production loss, there being fully a 35 per cent loss from a shortage of cars, or in the neighborhood of 85,000 tons. Many mines had been shut down as a result of labor trouble, now impending.

The output of the field as a whole was not much above 40 per cent during the final week of May. Organizers and agitators are even dictating to new companies just preparing to begin operations as well as to established companies, and the prospect for a large output in the Thacker field is not bright.

Nearly the entire output is being shipped to tidewater although there has been a slight growth in Lake shipments and in shipments to the Inland West.

NEW RIVER AND WINDING GULF

Production of Gulf Mines Is Seriously Curtailed by Virginian Ry. Strike—Idleness Is Also Quite General at C. & O. Mines Throughout the New River Field.

New River and Winding Gulf production was cut down to quite a material extent in the final week of May not only by a car shortage on both the Virginian and Chesapeake & Ohio railroads but also by other causes.

When Sewell's Point (the tidewater pier of the Virginian Ry.) became affected by the railroad strike at Princeton, W. Va., production on the Virginian was brought almost to a standstill.

The little coal which was shipped over the Virginian found its way to tidewater. The new Sewell's Point Coal Exchange was put in commission on June 1 and it was believed that this exchange would prove quite beneficial in making increased dumpings possible.

While there was no strike on the Chesapeake & Ohio, yet mines on that road had a poor car supply throughout the week; absence of a number of miners from work on election day also affected production to some extent.

Idleness was quite general in the New River field throughout the last week of May. Insofar as the limited production permitted, tidewater consignments were heavy, so heavy in fact that no New River coal remained for Inland Western markets and for the Lakes. Little effort was made, however, to send much coal westward, owing to the difficulty in getting cars back into West Virginia for reshipment.

Coke shipments to Western markets were much larger than coal shipments. Prices offered for New River smokeless at tidewater were from $7 and upward.

VIRGINIA

Mines Produce Half of Capacity—Cars Are Held Due to Overloading — Coal Goes to Tide.

Car shortages forced production downward in the Virginia fields during the last week of May to an appreciable extent, the output amounting to only a little over 104,000 tons; on the other hand lack of cars had entailed a loss reaching 72,000 tons.

With car-shortage losses running so high, mines were unable to produce as much as half of potential capacity, car shortage losses alone accounting for a 51 per cent loss. Labor-shortage and car-shortage losses combined amounted to about 80,000 tons; a shortage of man power entailing a loss of 7,300 tons.

From the figures given it will be apparent that there had been no increase in the supply of empties as a result of the Interstate Commerce Commission's transportation order. In order to take advantage of the scant supply, all cars were loaded to the utmost. That resulted in a number of instances, however, in cars being held for overloading, shipments in consequence being somewhat impeded.

NORTHEAST KENTUCKY

Output Is About 45 Per Cent for the Field—Lake Shipments Show a Gain—Demand for Steam and Byproduct Coal Is Unusually Strong.

Out of a potential capacity of 300,540 tons, only 136,650 tons were produced, during the week ended May 29, in the Northeast Kentucky field; the gross loss being 163,890 tons or 55 per cent. A loss of 159,725 tons was directly attributable to a scarcity of cars.

Although it was possible to produce little more coal than had been the case during the previous week, nevertheless there was a further gain in Lake shipments; one-fourth of the output being sent to the Lakes during the week mentioned. The tonnage to the Lakes was increased still more at the beginning of June, approximately one-third flowing to the Lakes during the first day or two of June.

Little screened or lump coal was being handled, most of the output being mine-run, inasmuch as this grade of coal commanded about as high a price as special sizes. There was little demand for domestic fuel, but on the other hand the call for steam and byproduct coal was running unusually strong.

KANAWHA

Slight Increase in Cars Does Not Swell Production—Output Is About 40 Per Cent on C. & O.—Continued Shortage of Equipment from Western Connections.

There was a slight increase in the number of cars available at mines in the Kanawha field during the final week of May, but production was less than it had been in the preceding week, because on May 25—primary election day—most of the miners went to the polls. During the week in question there was a total output of less than 90,000 tons at the mines in the field supplied by the Chesapeake & Ohio.

Production was not more than 35 or 40 per cent of normal, except at mines served by the Kanawha & Michigan road, the increased number of empties at such mines being due them because of a previous existing deficit.

The continued shortage of equipment in the field was largely due to the small number of cars received from western connections. While there appeared to be a somewhat larger Lake movement, still far below that of the corresponding period for previous years, shipments in general to Western markets were limited because of embargoes on certain roads in Ohio and Indiana.

Middle Western

SOUTHERN ILLINOIS

Record Time Made in Reconstructing Mine No. 18—Car Supply Is Still at a Standstill — Sunnyside Mine Resumes Operation.

The work of rebuilding the engine and generator rooms at mine No. 18, of the By-Products Coke Co., located at West Frankfort, is progressing rapidly and Superintendent W. B. Ward has announced that a resumption of mine operation can be expected shortly. The fire caused much damage, practically destroying the engine room, the generator room and several smaller adjacent buildings.

With slight repairs the generators and hoisting engines will be almost as good as new. Brick masons and workmen from the entire surrounding community were at once put to work on the reconstruction work. The damage done was estimated at over $150,000.

The car supply in southern Illinois is still at a standstill with no prospect of a change in sight. With the exception of a few mines in Saline County, near Harrisburg, there is not a single mine averaging over 16 to 20 hours per week, actual working time.

The mines at Sesser and Valier in Franklin County had been getting a little the best of the argument in car supply, but they too fell back with the rest during the month of May. The mines in Saline County, which are mostly controlled by the O'Gara Coal Co., of Chicago, are getting four days and better per week.

Operations at the Sunnyside mine, near Herrin, have been resumed after a shutdown of several months. The tipple has not yet been completed, however it is in such a state as to permit the hoisting of coal. The fire destroyed the washhouse, tipple and other buildings around the plant.

Another large deal has been under negotiation near Zeigler, east of here, whereby the W. P. Rend Coal Co., of Chicago, proposed a trade with the Zeigler Coal Co., of Zeigler, for ten sections of land in Franklin county owned by the Rend people, for nine sections of land in Williamson owned by the Zeigler Coal Co.

Canada

VANCOUVER ISLAND

Important Coal Development on Vancouver Island Noted — Pacific Coast Coal Mines, Ltd., Will Spend $500,000 on Its Morden and Suquash Plants — Big Tracts of Coal Held by the Company.

Recently on assuming the position of general superintendent of the Pacific Coast Coal Mines, Ltd., George Wilkinson, late Chief Inspector of Mines for British Columbia, announced that his company had adopted a plan for the development of its Vancouver Island coal properties that will mean the expenditure immediately of some $500,000.

Already the company has invested over $2,000,000 in the opening up of its Morden Mine which is to develop 1,600 acres of coal land, underlaid by the Douglas, Newcastle and Wellington seams. The plant is thoroughly modern, the pit head and screening plant being constructed of steel and reinforced concrete.

It is about five miles from the mine to the shipping point at Boat Harbor, transportation being furnished by a standard gage railway. At Boat Harbor bunkers have been erected with a capacity of 5,000 tons and washing plants also have been installed. The loading is done by a conveyor of a capacity of 750 tons an hour.

The Morden mine now is producing about 400 tons of coal a day and it is expected that the daily output will reach 1,000 tons by the end of the year. It is estimated that the area held by the company at this point will yield 250,000 tons a year for 90 years.

The Suquash holdings of the Pacific Coast Coal Mines, Ltd., are situated on the east coast of Vancouver Island, about 200 miles north of Nanaimo. The coal field there is one of the largest undeveloped proved areas on the Pacific coast and the Pacific company owns some 10,000 acres of these lands.

Three workable seams have been located at a moderate depth. The mine workings on the second seam now are developed to a point where from 300 to 400 tons daily can be produced, when a second opening is made and permanent shipping facilities are provided. If the coal seams run as evenly and consistently over the whole area, as indicated by drilling and other development on a portion of the property, then the company will have sufficient coal here to yield 500,000 tons a year for 264 years.

The Suquash mine was closed down with the beginning of the war, but it is the intention of the company to resume operations here without delay. A modern plant will be installed.

NICOLA-PRINCETON COAL FIELD

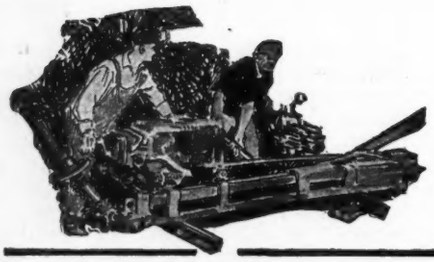
Considerable New Development Is Planned — Coalmont Collieries, Ltd., Will Construct Branch Line to Market Larger Output.

The Nicola-Princeton coal field of British Columbia has been attracting attention of late and responsible parties report that there is to be considerable new development in this section. The Harvard Coal Co., of Princeton, recently sold some of its product in Spokane, Wash., and it is said to have given satisfaction.

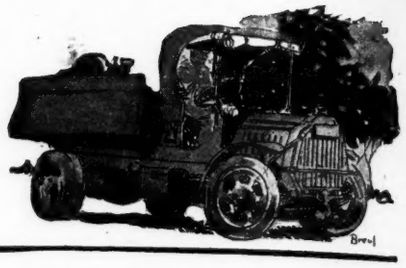
The property of the Coalmont Collieries, Ltd., also is to be extensively developed, a bond issue of $600,000 having been floated among Vancouver City and Calgary citizens to finance the undertaking.

A tramway is to be constructed for a distance of 2½ miles between the Kettle Valley Ry. and the mine shaft, and quarters will be provided for officials and men at the mine.

This work will be prosecuted with vigor during the summer, to the end that transportation facilities may be available to permit a much larger production than at present. This coal is to be marketed at Vancouver and elsewhere next winter.



Mine and Company News



ILLINOIS

Harrisburg—The officers and employees of the O'Gara Coal Co. had a get-acquainted meeting and general conference at the company's offices in Harrisburg, Saline County, Ill., recently. Among the officials present were vice president Frank A. Manley; D. B. McGehee, assistant to the vice president, of Chicago; General Superintendent, Ralph Brown and all the superintendents of the company's various mines in Saline County. This was the first of a series of such meetings to be held at stated intervals in the future.

Announcement has been made that O'Gara mine No. 12, near Harrisburg, which has been shut down for some time to have extensive repairs made, will resume operations as soon as a sufficient supply of cars can be secured. The improvements included concreting the shaft, overhauling the mine cars, building a new cage, improving the blacksmith shop and installing new shakers and screens.

INDIANA

Indianapolis—Governor Goodrich of Indiana and members of the state purchasing committee recently discussed the possibility of the state buying a coal mine, from which it could produce, partly by prison labor, the 150,000 tons of coal needed each year by the state penal and benevolent institutions. No decision was reached, but it is known that the governor is giving the matter some consideration. It was stated that officials of the United Mine Workers of America will fight the movement.

NEW YORK

New York—Andrade-Eyre, Inc., has been organized to carry on an export trade in coal and coke. The officers are C. Andrade, Jr., president; T. Lawrence Eyre, vice-president and Wallace D. Eyre, secretary-treasurer. Mr. Andrade until recently was treasurer of the Matlack Coal & Iron Corporation and is the president of the Wholesale Coal Trade Association of New York. He is also chairman of the Committee on Shipping of the American Manufacturers' Association and is prominently identified with the National Coal Association.

Mr. Eyre, the vice-president of the new corporation, is a state senator in Pennsylvania and is well known in the Central Pennsylvania Bituminous field. Wallace D. Eyre is the son of Senator Eyre and has been associated with his father in the management of the Eyre Fuel Co. He will continue with the latter company. The offices of the new company which will specialize in the coal export business are located at 80 Broadway, New York City.

OHIO

Pomeroy—The largest deal occurring in the Pomeroy Bend field was consummated recently when the Ebersbach interests of this city disposed of their big coal and mining properties to the Great Lakes Mining Co., which has large dock facilities and boats on the Lakes.

The deal includes all the coal holdings of the Martin Ebersbach Co. and Peacock Coal Co., together with all the mining equipment and power plants used in connection therewith.

In the properties sold is included the leases on the Charter Oak and Rolling Mill mines containing about 500 acres of coal, the Forrest Run and Dark Hollow mines containing about 2,000 acres of coal, together with about 600 acres of land where their big Forrest Run power plant is located and the Peacock Coal works located at Syracuse in connection with which there is about 4,000 acres of valuable coal land.

The consideration is stated to be not less than $2,500,000, with one-third of the amount cash in hand.

PENNSYLVANIA

Pittsburgh—The Westmoreland Coal Co., of Philadelphia, Pa., is preparing to install a revolving dump, conveying machinery and other improvements at its Export mine at Export, Westmoreland County, Pa. This is one of the largest mines in the Irwin gas-coal basin. A. J. Cameron, of Irwin, Pa., is general superintendent of the company.

Uniontown—George Whyel purchased the plant of the Superior Connellsville Coal Co., including 330 acres of Pittsburgh seam coal in Luzerne Township, Fayette County. He also obtained options for 180 additional adjoining acres. The plant will be electrified and 25 houses erected for workmen. Mr. Whyel paid $1,175,000 for the Superior holdings; and options on the 180 acres, known as the Porter and West tracts, will be exercised for $350,000. Electrification of the plant and the erection of the workmen's houses will mean an additional expenditure of $100,000, making the entire property a total investment of $1,625,000 by Mr. Whyel. The plant is between Uniontown and Brownsville on the Monongahela R. R. Mr. Whyel is a member of the Whyel Coal & Coke Co., of Uniontown, operating in Fayette and Westmoreland counties.

Johnstown—The Guaranty Coal Co., of Butler, Pa., has passed into the control of Messrs. R. T. Marsh, A. E. Koehler and Wm. Murphy, of Windber, Pa., and Wm. Morley, of this city. The Guaranty company is a Pennsylvania corporation with a capital stock of $80,000 and controls two seams of coal on 630 acres located near Worthington, Armstrong County. It is served with a 12-car siding on the Buffalo, Rochester & Pittsburgh R. R. The company, under its new management, contemplates extensive improvements and additional development.

VIRGINIA

Dante—The Clinchfield Coal Corporation is completing arrangements for extensive enlargements and improvements at its local mining properties. It is proposed to equip completely two additional plants; considerable machinery and equipment will be installed, including shaker screens, conveyors, picking tables, loading booms, etc., as well as the construction of a new tipple. The improvements will cost about $150,000.

WEST VIRGINIA

Bluefield—One of the large deals recently consummated in southern West Virginia was that involving the purchase by the Pocahontas Fuel Co., one of the largest producing companies in the state, of all the holdings of the Pulaski Iron Co. which has also been operating on a large scale. The Pulaski company only a short time ago acquired the holdings of the Shawnee company in McDowell County. The purchase includes the Shawnee and Pulaski collieries, the furnaces and iron properties at Pulaski and elsewhere, as well as the undeveloped Boutier tract.

Wheeling—Arrangements have been completed by the Bethlehem Steel Co. for the purchase of all the surplus coal produced in the West Virginia mines of the Monongahela Traction Co. The agreement provides for the delivery to the steel company of approximately 7,500 tons of coal monthly. The mines of the company are located in the Fairmont field, Monongalia, Marion, and Harrison counties. The same company is also securing the entire output of the Consolidation Coal Co. mines on Helens Run and on the Bingamon branch of the Western Maryland. From

reliable sources it is learned that the Bethlehem company proposes to increase the capacity of one of its Penn Mary mines in Preston County to 15,000 tons a day which, if true, will make it the largest producing coal mine in the world.

Stockholders of the Glendale Coal & Gas Co., including Davis Thomas, Judge John Nichols, J. H. Anderson, John Bentley, C. W. Hill and others, have perfected plans for the organization of the Reymann Farm Coal Co., and arrangements are now being made for immediate development of coal property in the vicinity of Elm Grove. Machinery and equipment will be installed.

Maybeury—The Norfolk-Angle colliery is understood to be considering plans for the rebuilding of its tipple and washery recently destroyed by fire, with a loss estimated at about $200,000.

Beckley—The High Knob Coal Co. and the Bacontown Coal Co., of the Winding Gulf field, have been purchased by John W. Wilson, of Wyco, W. Va., and J. B. Clifton, of Beckley, from C. M. Lilly and associates. The Bacontown company has 700 acres of smokeless coal land under lease. The new owners of the companies have decided to operate both properties under one management and name, the new company to be known as the Welton Smokeless Coal Co., with a capitalization of $350,000. John W. Wilson is president and J. B. Clifton vice president. Mr. Wilson is closely identified with the Tams interests while Mr. Clifton is president of the Raleigh Smokeless Fuel Co.

Fairmont—Machinery and material have been ordered for the new plant of the Chesapeake Coal Co., which will develop a slope mine on the Andrew Ice farm in the Fairmont field. The work of opening the mine, which will form a part of one of the best plants in the Fairmont field, has been started. This company recently acquired 700 acres of Pittsburgh and Sewickley coal. The company will have a model mining town for its employees, houses to be built in units of 20. The president of the comapny is T. H. Johnson, of Bellaire, Ohio, and the vice president is J. A. Paisley, of Cleveland, Ohio.

Well-known business men have launched the Hite Barnes Coal & Coke Co. which will operate in the Marion County field, this company being capitalized at $200,000. The following had an active part in the organization of the company: R. M. Hite, Glen F. Barnes, Marcus C. Hite, Ray C. Hunsaker and W. H. Conway.

Cecil—Work on the reconstruction of the coal plant of the Sterling Coal Co., at this place, destroyed by fire about two months ago, is progressing. This fire destroyed the tipple, office building and a number of miners' dwellings. The company mapped out a new town site and is building a number of houses on the new site. Office buildings are nearing completion. The general offices of the Sterling Coal Co. are in Altoona, Canada, the Sterling company being a Canadian concern with 15 mines in Ohio and West Virginia.

Charleston—Although the Alabama Bound Co. will operate in Alabama, most of its stockholders are Charleston people, this company having been organized with a capitalization of $200,000, for the purpose of mining coal, iron and other minerals. Those actively identified with the new company are: W. G. MacCorkle, J. E. Chilton, J. H. Moore, T. S. Clark and A. W. Taylor, all of Charleston, W. Va.

Three West Virginia coal companies have increased their capital stock quite appreciably since May. The Elm Grove Mining Company, of Pittsburgh, Pa., of which J. A. Paisley, of Cleveland, is president, increased its capitalization from $900,000 to $1,000,000. The Atlantic Smokeless Coal Co., headed by George Wolfe and operating at Davy, W. Va., has increased its capital stock from $150,000 to $200,000. The capital stock of the Camilla Red Ash Coal Co., of which T. B. Bryan, Jr., is president, has been increased from $75,000 to $300,000.

Association Activities

West Virginia Department of Mines

It is planned to encourage first aid and rescue work and to stimulate interest in such work. The West Virginia Department of Mines, under the direction of R. M. Lambie, State Mine Chief, is preparing to hold a state-wide first-aid and mine rescue meet late in the summer, probably in August.

So far the department has not attempted to arrange any details of this meet, owing to examinations to be held during June and July in order to permit miners to qualify as mine foremen and fire bosses.

On July 20 an examination is to be held at Mullens for the benefit of miners in Raleigh and Wyoming counties. Still another examination is to be held at Morgantown on July 30, following on the heels of the completion of the miners' short course there.

All emergency certificates issued by the department, permitting miners in certain cases to act as mine foremen, will be rescinded as soon as the coming examinations are completed and all papers graded.

Tidewater Coal Exchange

In order to relieve congestion at Sewell's Point, the tidewater terminal of the Virginian Ry., shippers on the Virginian and trans-shippers from Sewell's Point held a meeting at Norfolk, Va., recently and formed a tidewater coal exchange.

Nearly the entire tonnage shipped over the Virginian was represented at the meeting, and it was the opinion of nearly 70 per cent of those present that pooling arrangements were an imperative necessity at Sewell's Point.

As long as the old Tidewater Pool Exchange functioned, it was possible to keep cars under load down to 500 at a time, but with the discontinuance of the tidewater exchange the average number of cars under load at Sewell's Point had grown to 1,600.

Traffic officials of the Virginian were of the opinion that by re-establishing the tidewater exchange it would be possible to add fully 1,000 cars to the available supply and to increase the running time of mines by at least one day.

A special committee was appointed to draft plans toward establishing the exchange, consisting of C. H. Mead, of the C. H. Mead Coal Co.; W. W. Houston of the Pan Handle Coal Co. and J. T. Snead of the Fayett Smokeless Fuel Co.

Northern West Virginia Operators' Association

Operators of northern West Virginia have decided on a definite course of action in connection with the abuse of assigning cars by the railroads. Recently a special committee was appointed by the Association.

The railroads, in assigning cars to certain mines, have refused to count these cars against the number to which such mines are entitled under their allotment.

The committee reached a decision to institute proceedings not only before the Interstate Commerce Commission but also in the Federal courts in the event no action should be taken by the National Coal Association.

In the event that proceedings in the Federal Court should be instituted the case would be tried before Judge Alston Dayton in the United States District Court of northern West Virginia.

At the same time another committee was appointed to organize a local association within the larger association for the purpose of dealing with local freight rates, car supply, etc.

Washington State Fuel Dealers' Association

Plans for conducting a "buy-your-coal-early" campaign this summer, and the sending of a large representation from Seattle and other near-by cities to the State convention at Spokane, were discussed at a meeting and dinner held by 60 members of the Washington State Fuel Dealers' Association recently. The banquet was attended by members of the Seattle Retail Coal Merchants' Association and many fuel dealers from Tacoma and other cities near Seattle.

The western Washington fuel men intended to have a large delegation at the Spokane state convention, which was held June 3, 4 and 5, and the meeting in question was primarily to stimulate interest in the state conference.

A campaign similiar to that conducted last year, which is fostered by the Government Coal Commission, will be undertaken again this summer.

The objects of the early ordering of coal by consumers is for the employment of miners on an all-year basis, and also for preventing a sudden shortage of coal-hauling equipment at certain times.

Knox County Coal Operators' Association

Carl J. Fletcher, secretary of the Knox County Coal Operators' Association of Indiana, recently informed the Interstate Commerce Commission that under existing regulations the operators can not discriminate but must deal impartially with utilities, state institutions and industries in making shipments. Should priority regulations be instituted, it is said, enough coal could be shipped to provide utilities and the state institutions.

Reports from the Knox County field show that, during the first five days of the week beginning May 17, the railroads had billed to them 42 per cent of the coal mined. Officials of the mines declared that this amount, added to the coal confiscated for railroad use, would bring the figures up to at least 50 per cent. The ordinary percentage allowed or taken by the railroads is about 33 per cent.

Coming Meetings

American Institute of Electrical Engineers holds annual convention at White Sulphur Springs, W. Va., June 29 to July 2. Secretary, F. L. Hutchinson, New York, N. Y.

Pennsylvania Retail Coal Merchants' Association will hold its annual meeting June 23, 24 and 25 at Reading, Pa. Secretary, W. M. Bertolet, Reading, Pa.

The Rocky Mountain Coal Mining Institute will hold its annual meeting in Denver, Col., in conjunction with the National First Aid Meet on Sept. 9-11. Secretary, F. W. Whiteside, Denver, Col.

M. O. I. Coal Association will hold its annual convention June 16, 17 and 18 at Cedar Point, Ohio. Secretary, B. F. Nigh, Columbus, Ohio.

Industrial News

Chicago, Ill.—The report of the Trustees of the Fairbanks-Morse Pension Fund, for 1919, shows eight members pensioned, death benefits of $11,675 and net resources of $505,000, practically all invested in high-grade bonds. The fund was established on Jan. 1, 1917, and at the close of 1919 had 1,139 contributing members.

New York, N. Y.—The Mine Safety Appliances Co., of this place, opened its new office at 82 Fulton St., on May 1, where it will continue to handle a complete line of safety equipment for mine and industrial safety.

Philadelphia, Pa.—Carl A. Baer & Co., engineers, announced that on and after June 1, the firm's business will be conducted under the name of Baer, Cooke & Co., with offices in the Land Title Building, Philadelphia.

New York, N. Y.—What is said to be the largest concrete building ever erected on Manhattan Island is now going up, for occupancy by the Western Electric Co. and the New York Telephone Co. The building, partly an 11-story office building and warehouse and partly a 5-story and basement warehouse, will occupy the entire block surrounded by Hudson, West Houston, Greenwich and Clarkson Sts. The construction will cover an area of 338 by 200 feet and will be throughout of reinforced concrete, with the exception of a veneer of brick on the exterior walls. Work was begun on the first of May. It is expected that the owner will occupy the building by May 1921. The cost of the whole operation will involve nearly $3,000,000.

The Telephone company will have a garage and warehouse, while the Western Electric Co. will use the building for its local New York territory sales and distributing forces. Executive offices will be located on the upper floors and there will be dining rooms, handball courts, shower baths and the like, provided for Western Electric employees. This follows an established practice of the Western Electric Co.—to make working conditions as comfortable as possible.

It is said that there is no reason why New York City should adapt concrete in its entirety including the columns in all stories. The Middle Western, South Western, Southern and far Western cities almost exclusively use structural concrete instead of structural steel for buildings under 12 stories in height.

Personals

William Wignall, Division Engineer of the Greenwood division of the Lehigh Coal & Navigation Co., in Schuylkill County, Pa., has resigned to accept a position with the Hudson Coal Co. at Scranton, Pa. Herbert Seitzinger, a draftsman, has succeeded Mr. Wignall in his position with the Navigation company.

The Lehigh Coal & Navigation Co., of the Pennsylvania anthracite field, has created a new position, that of Accounting Engineer. This official will co-operate with the mechanical engineer on new appropriations involving abandonment of present equipment; with the construction superintendent, electrical engineer and district superintendents on cancellation of appropriations, abandonment of equipment and transfer of equipment or material applying to any capital appropriations. He will also be responsible for any inventory change. **W. E. Davis,** who was formerly head draftsman of the mechanical department, has been appointed to this position.

James Haslip has been appointed superintendent and general manager of the McDonald Coal Co., with headquarters in Clarksburg, W. Va. Prior to accepting his new post Mr. Haslip had been the superintendent of the Rosemont Coal Co. for a period of 12 years, and when he severed his connection with the Rosemont company he was presented with a handsome gold watch by the employees of the company.

John G. Pollock has been appointed by the Jamison Coal & Coke Co. as its chief electrician for its West Virginia division, as successor to O. R. Ely who has in turn been made the chief electrician of the Marion division of the Penn-Mary Coal Co. Mr. Pollock had been in the service of the Marion Gas Coal Co.

James J. Waldeck has been named as the head of the Charleston, W. Va., branch of the Imperial Coal Corporation, of New York. Mr. Waldeck was until recently connected with the Tidewater Coal Exchange as an inspector.

W. A. Field, of the Johnston City Coal Co., of Chicago has resigned his position to accept one with the Lake & Export Coal Corporation.

R. R. Atkins, formerly with the Stonega Coal & Coke Co., of Virginia, has assumed his new duties as general manager for the Liberty Coal & Coke Co., Straight Creek, Ky., in the place of William N. Ewald, resigned.

W. D. Duncan, president of the United Mine Workers of America, district 23, has tendered his resignation and has been appointed a member of the International Executive Committee, succeeding George Baker, who has accepted a position as secretary of the Western Kentucky Coal Operators' Association. Lonnie Jackson succeeds Mr. Duncan as president of the miner organization in this district.

Trade Catalogs

The Wellman-Seaver-Morgan Co., of Cleveland, Ohio, has recently issued the following bulletins showing some of the notable installations made by this company: **Coal and Ore-Handling Machinery;** bulletin 41; pp. 36. **Special Cranes;** bulletin 42; pp. 22. **Hydraulic Turbines;** pp. 20. **Hoisting and Mining Machinery;** bulletin 44; pp. 36. **Coke Oven Machinery;** bulletin 46; pp. 12. **Port and Terminal Equipment;** bulletin 47; pp. 20. These bulletins are all 8½ x 11 in. in dimension and all illustrated. The scheme of each of these bulletins is to show, on facing pages, a picture of a particular installation and a working blueprint of each machine.

Roebling Wire Rope and Wire. John A. Roebling's Sons Co., Trenton, N. J. Catalogue for 1920. Pp. 176; 3¼ x 6 in.; illustrated. Complete information about the Roebling products and some of the company's installations.

Climax Coal Handling Machinery. The Good Roads Machinery Co., Inc., Bulletin Building, Philadelphia, Pa. Catalogue 6. Pp. 64; 7 x 10¼ in.; illustrated. Description of coal handling machinery for retail coal yards, mills, factories, public buildings, etc. Numerous installations shown.

Wagon and Truck Loaders. Gifford-Wood Co., Hudson, N. Y.. Bulletin 400. Pp. 32; 6 x 9 in.; illustrated. Description of loaders and bagging machines for handling coal, ashes, coke, stone, sand, etc.

Coal Handling Machinery. Gifford-Wood Co., Hudson, N. Y. Catalogue 19. Pp. 160; 6 x 9 in.; illustrated. Devoted to description of coal-carrying machinery, coal storage and related auxiliaries. Numerous installations shown.

The Specialty Engineering Co., of Philadelphia, Pa., is distributing the following publications together with a folder to contain them: **Specialty Boiler House Equipment for Handling Coal and Ash;** pp. 8. **Car Unloader;** bulletin 2; pp. 4. **Wagon Loader;** bulletin 5; pp. 4. **Coal Crushers;** bulletin 6; pp. 4. **Specialty Wagon Loaders;** bulletin 4-A; pp. 4. These bulletins are 8½ x 11 in. in dimension and illustrated. Apparatus is described and installations are shown.

Columbian Rope and Twine. Columbian Rope Co., Auburn, N. Y. Catalogue. Pp. 95; 6 x 9 in.; illustrated. History of how fiber twine and rope are made from plant to factory. An unusually fine publication as regards appearance.

Oil-Firing for Boilers. Alldays & Onions, Birmingham, England. Catalogue 464. Pp. 4; 9 x 11¾ in.; illustrated. Shows diagrams and gives full particulars of a number of characteristic conversions to liquid fuel.

Davis No. 1 Blaster. The Atlas Powder Co., Philadelphia, Pa. Folder. Pp. 8; 3 x 6 in.; illustrated. Full information and description of a small light weight blasting machine.

Trade Channels from Europe Open. B. K. Elliott Co., Cleveland, Ohio. Wall poster. Pp. 1; 22 x 28 in.; illustrated. Shows engineering supplies with description.

Worthington Motorship Machinery Announcement. Worthington Pump & Machinery Corporation, 115 Broadway, New York, N. Y. Four-page announcement; 8½ x 11 in.; illustrated. Statement about the new Worthington marine oil engine.

Electric Hoists, Chain Blocks, Cranes and Trolleys. The Franklin Moore Co., Winsted, Conn. Catalog. Pp. 8; 3½ x 6 in.; illustrated. Descriptive, with price list.

Suggestions for Retail Coal Yard Equipment. Specialty Engineering Co., Trenton and Allegheny Aves., Philadelphia, Pa. Catalogue 4. Pp. 48, 6 x 9 in.; illustrated. Description of apparatus for handling coal by modern methods. Installations shown.

Brass. The Bridegport Brass Co., Bridgeport, Conn. Bulletin. Pp. 78; 8 x 10½ in.; illustrated. A brief history of the ancient art of brass making and its early (and recent) method of production; contrasted with the method of the electric furnace process—a twentieth century achievement. An artistic publication.

Publications Received

New Provisions for Compensation and Medical and Surgical Care and Supplies Under the War Risk Act. Treasury Department. Bureau of War Risk Insurance. Washington, D. C. Circular LD-30. This circular is addressed to former service men; a copy may be obtained from the Bureau of War Risk Insurance. Full instructions are given to service men eligible for compensation. A warning is sounded to obtain a certificate of injury within one year from the date of discharge or resignation.

Twenty-sixth Report of the Board of Directors of the Lehigh & New England R.R. Co. For fiscal year ended Dec. 31, 1919. Illustrated; pp. 27; 9 x 12 in. Of interest to railroad and anthracite men, particularly to those interested in affairs of the Lehigh, Coal & Navigation Co.

Recent Developments in Oxygen Cutting. By Stuart Plumley and F. J. Napolitan. Reprint of paper presented at a meeting of the American Welding Society. Published by Davis-Bournonville Co., Jersey City, N. J. Not illustrated; pp. 2; 6 x 9 in. On the subject of cast iron cutting with the gas torch.

Metallography of Iron and Steel with Reference to Oxygen Cutting. By F. J. Napolitan. Published by Davis-Bournonville Co., Jersey City, N. J. Not illustrated; pp. 3; 6 x 9 in. Paper connected with the cutting of iron by the gas torch.

Obituary

Edmund Gybbon Spilsbury, who was president of the American Institute of Mining Engineers in 1896, died in New York on May 27. Mr. Spilsbury was born in London in 1845 and was educated in Liege, Belgium, and in the University of Louvain, from where he was graduated in 1862. After taking a course at Clausthal, Germany, he came to this country in 1870. Mr. Spilsbury was a former president of the Engineers' Club of New York and a member of the American Society of Mechanical Engineers, the Institution of Mining and Metallurgy of Great Britain, the Mining and Metallurgical Society of America, and the American Electrochemical Society.

Dwight Hukill Coble, aged 46, secretary of the H. C. Frick Coke Co. died on May 23 of pneumonia in his home at Pittsburgh, Pa. A week previously his only son, Dwight S. Coble, aged 16, died of the same disease. Mr. Coble was born in Steubenville, Ohio. Before coming to Pittsburgh in 1896, he was associated with various steel companies, now a part of the United States Steel Corporation. In 1900 he became private secretary to the late James Gayley. In 1902 he joined the service of the H. C. Frick Coke Co. Mr. Coble studied at Princeton University. He was a member of various clubs and societies. He leaves a widow and his parents, Mr. and Mrs. Hugh S. Coble, of Steubenville.

James V. Morris, a prominent coal operator of Cleveland, died recently in his residence, Euclid Ave., Cleveland, Ohio, following an extended illness. Death was due to apoplexy. Mr. Morris had spent the winter months in the South in the hope of benefiting his health and had returned only a few weeks ago.

For the last 30 years he had been located in Cleveland. Mr. Morris owned large coal mines which he had extensively and successfully operated.

Phillips G. Matheny, president and secretary of the West Side Coal Co., Springfield, Ill., died recently at his home in Springfield. He was quite a prominent man in Illinois coal circles and was affiliated with the Central Illinois Coal Operators' Association.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

PIG IRON—Quotations compiled by the Matthew Addy Company:

	Current	One Month Ago
CINCINNATI		
No. 2 Southern	$45.60	$44.60
Northern Basic	42.80	42.80
Southern Ohio No. 2	46.80	43.80
NEW YORK, Tidewater delivery		
2X Virginia (silicon 2.25 to 2.75)	49.65	47.65
Southern No. 2 (silicon 2.25 to 2.75)	49.70	47.70
BIRMINGHAM		
No. 2 Foundry	42.00@44.00	41.00
PHILADELPHIA		
Eastern Pa., No. 2 x 2.25-2.75 sil.	46.00@48.25	45.35–46.35*
Virginia No. 2	45.00*	43.25*
Basic	44.50†	43.00†
Grey Forge	43.50*	42.50*
CHICAGO		
No. 2 Foundry Local	44.25	43.25
No. 2 Foundry Southern	47.00	46.60
PITTSBURGH, including freight charge from the Valley		
No. 2 Foundry Valley	45.65	43.65
Basic	44.40	42.90
Bessemer	44.90	43.40
MONTREAL		
Silicon 2.25 to 2.25%	43.25	43.25

* F. o. b. furnace. † Delivered.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill Pittsburgh	New York Current	New York One Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	$2.45@$4	$3.97@$5	$3.47	$4.04	$3.97
Channels, 3 to 15 in.	2.45@ 4	3.97@ 5	3.47	4.04	3.97
Angles, 3 to 6 in., ¼ in. thick.	2.45@ 4	3.97@ 5	3.47	4.04	3.97
Tees, 3 in. and larger	2.45@ 4	4.02@ 5	3.52	4.04	4.02
Plates	2.65@ 4	4.17@ 5	3.47	4.24	4.17

BAR IRON—Prices in cents per pound at cities named are as follows:

Pittsburgh	Cincinnati	St. Louis	Birmingham
4.25	3.50	4.50	5.00

NAILS—Prices per keg from warehouse in cities named:

	Mill Pittsburgh	St. Louis	Chicago	Birmingham	San Francisco
Wire	$4.00	None	$4.15	$5.75	$6.00
Cut		None	7.00	....	8.50

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Chicago	St. Louis	Cincinnati	San Francisco	Birmingham
Standard railroad spikes ⅝-in. and larger	$4.00	$3.62	$5.34	$4.25	$5.65	$6.00
Track bolts	6@6.50	4.62	7.50	5.50	6.65	7.50
Standard section angle bars	3@4	3.02	Prem.	....	4.90	....

COLD FINISHED STEEL—Warehouse prices are as follows:

	New York	Chicago	Cleveland	Cincinnati	St. Louis
Round shafting or screw stock, per 100 lb. base	$6.25	$5.80	$6.00	$6.50	$5.90
Flats, squares and hexagons, per 100 lb. base	6.75	6.30	5–6.50	6.85	6.40

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill Pittsburgh	Chicago	St. Louis	Birmingham
Straight	$5.75	$7.00	$7.00	$7.00
Assorted	5.85	7.15	7.15	7.25

Cincinnati—Horseshoe nails sell for $4.50 to $5 per 25-lb. box.

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York One Month Current	New York One Month Ago	New York One Year Ago	Chicago	St. Louis	San Francisco	Dallas
4 in.	$79.30	$75.30	$60.70	$78.80	$78.00	$93.55	$74.30
6 in. and over	76.30	72.30	57.70	75.80	75.00	90.55	71.30

Gas pipe and 16-ft. lengths are $1 per ton extra.

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh Current	Pittsburgh One Year Ago	Chicago Current	Chicago One Year Ago
Standard Bessemer rails	$45@60	$45.00	$45.00 @$55.00	$45.00
Standard openhearth rails	47@60	47.00	47.00 @ 57.00	47.00
Light rails, 8 to 10 lb.	2.585*@3.75	2.585*	2.585*@ 3.75*	2.835*
Light rails, 12 to 14 lb.	2.54* @3.75	2.54*	2.54* @ 3.75*	2.79*
Light rails, 25 to 45 lb.	2.45* @3.75	2.45*	2.45* @ 3.75*	2.70*

* Per 100 lb.

OLD MATERIAL—The prices following are per gross ton paid to dealers and producers in New York. In Chicago and St. Louis the quotations are per net ton and cover delivery at the buyer's works, including freight transfer charges:

	New York	Chicago	St. Louis
No. 1 railroad wrought	$29.00	$27.00	$29.00
Stove plate	29.00	30.00	32.50
No. 1 machinery cast	39.00	37.50	39.50
Machine shop turnings	15.50	12.50	15.50
Cast borings	16.00	14.25	16.50
Railroad malleable cast	27.50	28.00	28.50
Rerolling rails	29.50	32@33	31.50@32
Relaying rails		40@50	50@55

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Chicago
$0.10	$0.16½	$0.18	$0.11	$0.15

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham
Solid	14c.	13c.	15c.
Hollow	16c.	....	....

PIPE—The following discounts are to jobbers for carload lots on the Pittsburgh basing card, discounts on steel pipe, applying as from January 14, 1920, and on iron pipe from January 7, 1920:

BUTT WELD

Inches	Steel Black	Steel Galv.	Inches	Iron Black	Iron Galv.
⅛, ¼ and ⅜	47	20½	½ to 1¼	34½	18½
½	51	36½			
¾ to 3	54	41½			

LAP WELD

2	47	34½	2	28½	14½
2½ to 6	50	37½	2½ to 6	30½	17½

BUTT WELD, EXTRA STRONG PLAIN ENDS

⅛, ¼ and ⅜	43	25½	½ to 1¼	34½	19½
½	48	35½			
¾ to 1¼	52	39½			

LAP WELD, EXTRA STRONG PLAIN ENDS

2	45	33½	2	29½	16½
2½ to 4	48	36½	2½ to 4	31½	19½
4½ to 6	47	35½	4½ to 6	30½	18½

Stocks discounts in cities named are as follows:

	New York Black	New York Galvanized	Cleveland Black	Cleveland Galvanized	Chicago Black	Chicago Galvanized
⅜ to 3 in. steel butt welded	40%	24%	40%	31%	54%	40½%
3½ to 3 in. steel lap welded	35%	20%	42%	27%	50%	37½%

Malleable fittings. Class B and C, from New York stock sell at list + 23%.
Cast iron, standard sizes, net.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Hercules red strand, all constructions	20%
Patent flattened strand, special and cast steel	20%
Patent flattened strand, iron rope	5%
Plow steel round strand rope	30%
Special steel round strand rope	30%
Cast steel round strand rope	22½%
Iron strand and iron tiller	5%
Galvanized iron rigging and guy rope	+12%

San Francisco: Galvanized, less 5%, bright less 25%.
Chicago, +12½ on galvanized, 30 off on bright.

SHEETS—Quotations are in cents per pound in various cities from warehouse; also the base quotations from mill:

Blue Annealed	Large Mill Lots Pittsburgh	St. Louis	Chicago	San Francisco	New York Current	New York One Yr. Ago
No. 10	3.55@3.60	7.09	7.02	7.50	6.62@8.00	4.57
No. 12	3.60@ 6.05	7.09	7.07	7.55	6.67@ 8.05	4.62
No. 14	3.65@ 6.10	7.09	7.12	7.60	6.22@ 8.10	4.67
No. 16	3.75@ 6.20	7.09	7.17	7.70	6.82@ 8.20	4.77
Black:						
*Nos. 18 and 20	4.15@ 6.30	8.10	7.80	7.85	7.80@ 8.80	5.42
*Nos. 22 and 24	4.20@ 6.35	8.10	7.85	7.90	7.85@ 8.85	5.47
*No. 26	4.25@ 6.40	8.10	7.90	7.95	7.90@ 8.90	5.52
*No. 28	4.35@ 6.50	8.10	8.00	8.05	8.00@ 9.00	5.62
Galvanized:						
No. 10	5.80@ 7.50	9.60	8.50	8.60	8.25@10.00	5.97
No. 12	4.80@ 7.60	9.60	8.60	8.60	8.35@10.10	6.02
No. 14	4.80@ 9.60	9.60	8.60	8.60	8.35@10.10	6.07
Nos. 18 and 20	5.10@ 7.90	9.60	8.90	8.90	8.65@10.40	6.37
Nos. 22 and 24	5.25@ 8.05	9.60	9.05	9.05	8.80@10.55	6.52
*No. 26	5.40@ 8.20	9.60	9.20	9.20	8.95@10.70	6.67
*No. 28	5.70@ 8.50	9.60	9.50	9.50	9.25@11.00	6.97

* For painted corrugated sheets add 30c. per 1,000 lb. for 5 to 28 gage; 25c. for 19 to 24 gages; for galvanized corrugated sheets add 15c; all gages.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair size orders, the following amount is deducted from list:

	New York Current	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago	St. Louis Current
Hot pressed square	+$4.00	$ .75	$1.90	$ .50	$2.00	$2.25
Hot pressed hexagon	+ 4.00	.75	1.90	.50	2.00	2.25
Cold punched square	+ 4.00	.75	1.90	.50	1.30	2.25
Cold punched hexagon	+ 4.00	.75	1.90	.50	1.30	2.25

Semi-finished nuts, ⅞ and smaller, sell at the following discounts from list price:

	Current	One Year Ago
New York	30%	50–10%
Chicago	50%	50%
Cleveland	50%	50–10%
St. Louis	45%	....

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago	St. Louis
½ by 4 in. and smaller	list	40%	30%	50–5%
Larger and longer up to 1 in. by 30 in.	+20%	20–10%	20%	40–5%

WASHERS—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:
New York....list Cleveland....$3.00 Chicago....$3.00

For cast-iron washers the base price per 100 lb. is as follows:
New York....$7.00 Cleveland....$4.50 Chicago....$4.25

RIVETS—The following quotations are allowed for fair sized orders from warehouse:

	New York	Cleveland	Chicago
Steel ⅞ and smaller	30%	40% off	35–10%
Tinned	30%	40% off	35–10%

Boiler, ½, ⅝, ¾, 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb.:
New York..$7.00 base Cleveland..$4.00 Chicago..$5.37 Pittsburgh..$4.72

Structural, same sizes:
New York..$7.10 Cleveland..$4.10 Chicago..$5.47 Pittsburgh..$4.82

CONSTRUCTION MATERIALS

LINSEED OIL—These prices are per gallon:

	New York Current	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
Raw, 5-bbl. lots	$1.87	$1.59	$2.00	$2.30	$2.05	$1.78
5-gal. cans	1.87*	1.72	2.25	2.45	2.30	1.98

*To this *oil* price must be added the cost of the cans (returnable), which is $2.25 for a case of six.

WHITE AND RED LEAD—Base price.

	Red Current Dry	Red Current In Oil	Red 1 Year Ago Dry	Red 1 Year Ago In Oil	White Current Dry and In Oil	White 1 Year Ago Dry and In Oil
100-lb. keg	15.50	17.00	13.00	14.50	15.50	13.00
25 and 50-lb. kegs	15.75	17.25	13.25	14.75	15.75	13.25
12½-lb. keg	16.00	17.50	13.50	15.00	16.00	15.50
5-lb. cans	18.50	20.00	15.00	16.50	18.50	15.00
1-lb. cans	20.50	22.00	16.00	17.50	20.50	16.00

500 lb. lots less 10% discount. 2000 lb. lots less 10–2½% discount.

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Chicago....$14.00 Cincinnati....$24.00
St. Louis, salmon....16.00 Birmingham....15.00

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows at manufacturing points:

	1-Ply c.l.	2-Ply l.c.l.	3-Ply c.l.
No. 1 grade	$2.40	$2.90	$3.45
No. 2 grade	2.15	2.00	3.10

Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs $3.50 per roll in carload lots and $3.75 for smaller quantities.

Shingles, red and green slate finish, cost $7.75 per square in carloads; $8.00 in smaller quantities, in Philadelphia.

ROOFING MATERIALS—Prices per ton f.o.b. New York and Chicago:

Tar felt (14 lb. per square of 100 sq.ft.) per roll	$3.50
Tar pitch (in 400-lb. bbl.) per 100 lb.	1.85
Asphalt pitch (in barrels) per ton	46.50
Asphalt felt (light) per ton	118.00
Asphalt felt (heavy) per ton	119.50

HOLLOW TILE—Price per block in carload lots for hollow building tile:

	4x12x12	8x12x12	12x12x12
Minneapolis	$0.087	$0.158	$0.248
St. Louis		none on market	
Seattle	.09	.175	.30
New Orleans	.198	.264	.37
Chicago	.132	.2387	.3581
Cincinnati	.125	.2186	.3236
Birmingham	.122	.224	

LUMBER—Price of pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$53.00	$46.00	$42.00
Birmingham	63.00	70.00	58.00
Cincinnati	55.00	50.00	50.00

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing 20%	Gelatin 40%	Gelatin 60%	Gelatin 80%	Black Powder
New York	.....	$0.3425	$0.3425	.....	$2.30
Boston	$0.2475	.27	.30	$0.3425	2.45
Kansas City	.235	.26	.385	.3275	2.40
New Orleans	.2375 (50%)	.2275	.2475	....	.....
Seattle	.18	.2175	.2475	.29	2.45
Chicago	.2175	.2525	.2975	.34	2.45
St. Paul	.185	.2275	.2525	....	2.25
St. Louis	.2175	.26	.285	.295	1.90
Los Angeles	.25	.30	.35	.275	2.95

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Birmingham
Cup	8.5	3.7–3.8	8.5
Fiber or sponge	9.	7.2	8.5
Transmission	10.	14.	8.5
Axle	5.	5.	4.5
Gear	6.5	6.5	8.5
Car journal	12.0	4.7	8.5

BABBITT METAL—Warehouse prices in cents per pound:

	New York Current	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
Best grade	90.00	87.00	74.50	79.00	70.00	75.00
Commercial	50.00	42.00	21.50	18.50	15.00	15.00

HOSE—Following are prices of various classes of hose:

Fire

	50-Ft. Lengths
Underwriters' 2½-in.	85c. per ft.
Common, 2½-in.	30%

Air

	First Grade	Second Grade	Third Grade
¾-in. per ft.	$0.60	$0.40	$0.30

Steam—Discounts from list

First grade	20%	Second grade	30%	Third grade	45%

LEATHER BELTING—Present discounts from list in fair quantities (½ doz. rolls):

Light Grade	Medium Grade	Heavy Grade
30%	30%	20%

RAWHIDE LACING—For cut, best grade, 25%, 2nd grade, 30%. For laces in sides, best, 79c. per sq. ft.; 2nd, 75c. Semi-tanned: cut, 20%; sides, 83c. per sq. ft.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$1.00
Asbestos for high-pressure steam	1.70
Duck and rubber for piston packing	1.00
Flax, regular	1.20
Flax, waterproofed	1.70
Compressed asbestos sheet	.90
Wire insertion asbestos sheet	1.50
Rubber sheet	.50
Rubber sheet, wire insertion	.70
Rubber sheet, duck insertion	.50
Rubber sheet, cloth insertion	.30
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.30
Asbestos wick, ½- and 1-lb. balls	.85

MANILA ROPE—For rope smaller than ¾-in. the price is ½ to 2c. extra: while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ⅝-in., 8 ft.; ½-in., 6; ⅜-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ⅝-in. and larger, in 1200-ft. coils:

Boston	$0.35	Birmingham	$0.32
New York	.29	Atlanta	.295
St. Louis	.265	Kansas City	.30½
Chicago	.275	New Orleans	.31
Minneapolis	.275	Seattle	.28
San Francisco	.27	Los Angeles	.31

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING Pipe Size	Standard List Per Lin.Ft.	BLOCKS AND SHEETS Thickness	Price per Sq.Ft.
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
3-in.	.45	1½-in.	.45
4-in.	.60	2 -in.	.60
6-in.	.80	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure — List

For low-pressure heating and return lines: 4-ply.... 40% off; 3-ply.... 42% off; 2-ply.... 44% off

WIRING SUPPLIES—New York prices for tape and solder are as follows:

Friction tape, ½-lb. rolls	55c. per lb.
Rubber tape, ½-lb. rolls	60c. per lb.
Wire solder, 50-lb. spools	46c. per lb.
Soldering paste, 2-oz. cans	$1.20 per doz.

COPPER WIRE—Prices per 1000 ft. for rubber-covered wire in following cities:

	New York Single Braid, Solid	New York Double Braid, Stranded	New York Duplex	Birmingham Single Braid, Solid	Birmingham Double Braid, Stranded	Birmingham Duplex	Cincinnati Single Braid, Solid	Cincinnati Double Braid, Stranded	Duple
14	$12.00	$13.90	$28.50	$13.90	$20.90	$35.80	$12.00	$14.66	$29.07
10	18.30	23.85	41.50	26.10	35.50	59.40	21.11	24.98	49.58
8	25.54	32.70	56.70	36.60	49.50	79.00	30.83	35.33	.....
6	.....	51.40	.....	60.60	67.25	.....	.....	54.27	.....
4	.....	76.00	.....	.....	93.41	.....	.....	76.19	.....
2	.....	101.80	.....	.....	120.40	.....	.....	109.60	.....
1	.....	131.86	.....	.....	155.23	.....	.....	141.20	.....
0	.....	160.00	.....	.....	188.77	.....	.....	171.20	.....
00	.....	193.50	.....	.....	229.19	.....	.....	207.60	.....
000	.....	235.20	.....	.....	278.64	.....	.....	257.40	.....
0000	.....	288.60	.....	.....	338.41	.....	.....	306.80	.....

FREIGHT RATES—On finished steel products in the Pittsburgh district including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, flat sheets (except planished), chains, etc., the following freight rates per 1000 lb. are effective:

Boston	$0.30	New Orleans	$0.385
Buffalo	0.17	New York	0.27
Chicago	0.27	Philadelphia	0.245
Cincinnati	0.23	St. Louis	0.24
Cleveland	0.17	St. Paul	0.495
Kansas City	0.59	Pacific Coast (all rail)	1.25*

Note—Add 3% transportation tax. *Minimum carload, 80,000 lb.